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*Opinion Research Corp.*

# **SAFETY BELT INTERLOCK SYSTEM: USAGE SURVEY**

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**May 1975**

**Final Report**

**PREPARED FOR:**

**U.S. DEPARTMENT OF TRANSPORTATION**

**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**

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16. Abstract <p>This research is intended to measure the effectiveness of the interlock system in increasing safety belt usage. Three separate studies were conducted: (a) among rental car customers at U.S. airports (to obtain a large body of data early in the 1974 model year); (b) among rental car customers at Toronto International Airport, where different types of use-inducing systems could be studied; and (c) among owners of private cars in the general population of vehicles. Study (a) was conducted at Miami, Chicago, and Los Angeles. Customers returning 1974 model rental cars at these airports were observed for their safety belt usage, and a subsample of nonusers immediately interviewed to determine the circumstances and attitudes surrounding their nonusage. Similar methods of observing and interviewing were followed at Toronto. Study (c) was conducted in a sample of 19 U.S. cities by having observers note the usage patterns and sex of the driver and right outboard passenger, certain major characteristics of the car, and the license number. The license number permitted verification of the observed model year, provided other descriptive information about the car, and afforded a means of conducting a follow-up telephone interview with the presumed driver. This interview covered practices and attitudes with regard to safety belt usage and the interlock system.</p>					
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## INTRODUCTION: BACKGROUND AND OBJECTIVES

Proper and more widespread use of automobile safety belts by the motoring public is needed to reduce the number of casualties in traffic accidents which occur each year in the United States. Research has demonstrated that safety belt users are much less likely to be killed or injured seriously during traffic accidents than are nonusers. It is estimated that 10,000-15,000 of the 57,000 traffic deaths in 1972 could have been avoided had people worn their safety belts. Recent studies indicate that safety belt usage has been at a relatively low level. Before the 1972 model year, only about one-fifth of all vehicle occupants used lap belts when available, and one out of every twenty occupants used shoulder belts when available.

In order to increase usage of both lap and shoulder belts, thereby protecting drivers and passengers against injury and death in the event of a crash, NHTSA issued motor vehicle standards requiring essentially the following:

- In vehicles manufactured after January 1, 1972, a warning system activates once the ignition is "on" and the transmission is in a forward gear, unless the lap belt has been buckled or withdrawn from its retractor. This warning system consists of a "Fasten Seat Belt" light and a buzzer which is connected to the belts at the front outboard seats.
- Vehicles manufactured after August 15, 1973, include the following:
  - (a) A nondetachable shoulder belt connected permanently to the lap belt, which is connected to a self-locking retractor. The shoulder belt is connected to an inertia reel which normally allows forward movement of the upper torso, but locks tight in a collision, thereby providing restraint of the upper torso.
  - (b) A light and buzzer warning system which activates when an attempt is made to start or drive the car with one or more front seat occupants not wearing their safety belt.

- (c) A logic circuit which requires that the belt be extended from the retractor or buckled after the occupant is seated, each time the car is started. This logic system is intended to prevent permanently fastening the belt and tucking it behind the seat, or tying a knot in the belt and forgetting about it, as is frequently done with the simple warning system on the 1972 and 1973 cars.
- (d) A starter interlock which does not allow the starter motor to be activated unless the logic circuit is "satisfied."

The research reported here is part of a program to determine the effectiveness of safety belt interlock systems in increasing belt usage.

In the first phase, an observation/interview study was performed to determine safety belt usage among drivers and front seat passengers in 1974 model year vehicles being returned to rental agencies at three U.S. airports -- Miami, Chicago, and Los Angeles. Rental cars offered the most efficient way of obtaining a large volume of data on belt usage early in the 1974 model year. Personal interviews were conducted with a sample of rental car customers who were found not to be wearing the safety belt (or shoulder harness) upon their return to the rental car agency. The interview established whether the interlock system was defeated/circumvented, if this was done, and the use of safety belts in rental car customers' own cars.

The second phase of the research was a study at the Toronto International Airport similar to that at the three U.S. airports. The Toronto study presented an opportunity to study seat belt usage under systems somewhat different from the interlock system in 1974 model cars in the United States.

In the third phase, a study of the general traffic population was conducted in 19 U.S. cities. Drivers and front seat passengers in 1974 and 1973 model cars were observed by trained field personnel to determine their use of safety belts. (In November and December 1974, 1966-1971 model cars were also observed.) A subsample of drivers of 1974 model cars was then interviewed by telephone to ascertain personal reactions to the interlock system, methods and reasons for defeat or circumvention of the system if this was done, system reliability, and comfort and convenience aspects of the belts.

Because of their greater representativeness and recency, findings from the study of the general traffic population in 19 cities are presented ahead of findings from the studies at airports.

## SUMMARY OF FINDINGS

This Summary of Findings is based mainly on the data obtained in the 19-city study of the general population of vehicles, which represent the most definitive findings from this research program. The studies of rental cars at airports, which were conducted earlier than the 19-city study, but are reported last in the detailed findings, were intended mainly to provide an early indication of safety belt usage (U.S. airports) or usage under different use-inducing systems (Toronto).

### 1. Overall Usage

Perhaps the best summary of progress on safety belt usage in this country is provided by observation data for drivers and passengers obtained in the last two months of 1974 for three model years/ periods:

	<u>1974 Models</u>	<u>1973 Models</u>	<u>Pre-1972 Models</u>
Both shoulder and lap belt on	41%	5%	5%
Lap belt only	10	23	11
	} 51%	} 28%	} 16%
Both off	49	72	84
	N = 4,637	850	5,858

Though 1973 models, with their light-and-buzzer warning systems, showed increased usage over earlier models, with little or no warning systems, the dramatic improvement came with 1974 models. Then the interlock and one-piece belt system raised the degree of full protection (both shoulder and lap belt on) to 41%, and partial protection (both on, or lap belt only) to 51%.

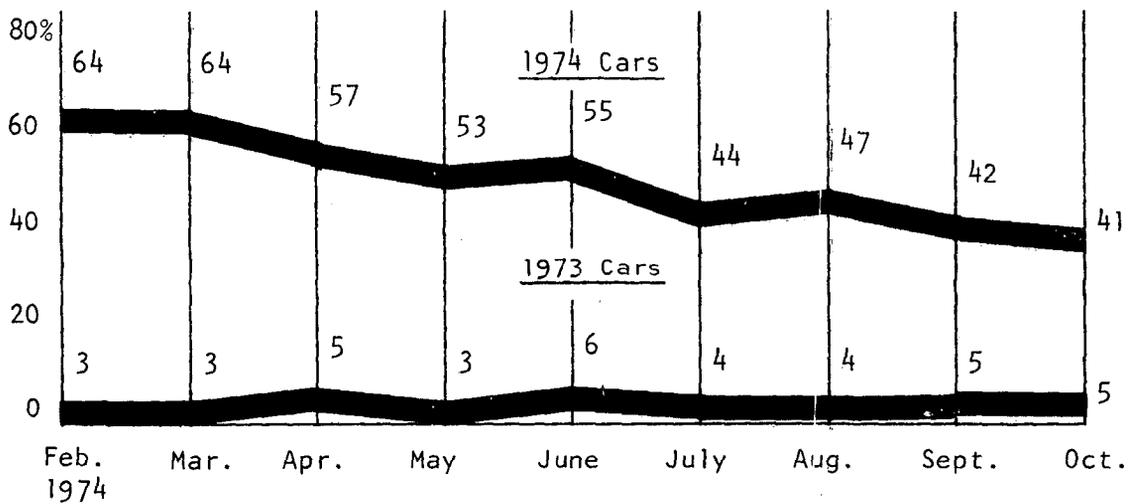
## 2. Trends in Usage

Safety belt usage in 1974 model cars gradually declined during the period for which monthly data, verified as to model year, are available in this study.

In February 1974, 64% of the drivers and front seat passengers in 1974 model cars were wearing both shoulder and lap belts; by November, this percentage had dropped to 41% -- a decline of 23 percentage points, or roughly one-third, in nine months.

During the same period, safety belt usage in 1973 model cars remained at a relatively constant, low level -- almost an irreducibly low level (3-6% use rate for both shoulder and lap belt on).

PERCENT OF DRIVERS AND PASSENGERS  
WEARING BOTH LAP AND SHOULDER BELT



Total N { 1974 cars = 29,751  
                  1973 cars = 8,276

Some of the reasons for the decline in usage emerge from the interview data. On the mechanical side, malfunctions occur more commonly as the car is driven more and grows older. On the human side, drivers who find the safety belt uncomfortable or difficult to use, or who are psychologically opposed to wearing it, learn how to defeat or circumvent the system as they become more familiar with their car's safety belt or talk to other people.

The decline in usage is obviously an unfavorable trend as far as reducing fatalities and injuries in automobile accidents is concerned. Leading countermeasures would appear to be improved design of safety belts (for greater comfort, ease of use, and reliability) and driver education on the importance of wearing the safety belt on all occasions.

Meanwhile, under guidelines required by recent legislation, standards for use-inducing systems have been drastically reduced in 1975 model cars compared with 1974 model cars. It remains to be seen what the trend in actual usage in 1975 cars will be.

### 3. Similarities and Differences in Usage Patterns

Use habits are very nearly the same for drivers and passengers, according to the roadside observations.

Also, usage is almost the same for men and women. This is borne out both by the observations and by asking drivers in the follow-up telephone interview what they usually do. Attitudes toward safety belts, as revealed in the telephone interviews, also are nearly the same for men and women.

On the other hand, attitudes toward safety belts do differ by age. People under 50 are more favorable than those over 50, which may well augur favorably for the future.

Finally, within the area of anthropometric characteristics, there are indications that taller people are more likely to use safety belts, and heavier and stouter people less likely.

Turning to characteristics of the vehicles themselves, we find that the lighter and smaller the car, the more likely its occupants are to wear safety belts. In the heavier and luxury-type cars, on the other hand, safety belt usage is observed to be lower.

Likewise (and this to a degree is related to car size) safety belt usage is observed to be greater in cars with bucket seats than in those with bench seats.

The observation data also show differences in usage according to car manufacturers. Usage is highest for foreign cars, and is lowest for Chrysler. (As shown later, the Chrysler system receives considerable criticism for being inconvenient to use.)

Finally, usage of safety belts is about the same regardless of whether the driver has a two-door or four-door car.

#### 4. Overall Attitudes Toward Interlock System

When asked in the telephone interview for their general impression of the safety belt interlock system, more drivers say "unfavorable" (59%) than "favorable" (36%). Only 5% have no opinion.

Attitudes and behavior on this point correlate highly. Drivers who say they usually wear both the shoulder and lap belt are favorable to the interlock system 54% to 41%. Those who say they usually drive with both off are unfavorable in the ratio of 87% to 9%.

#### 5. Interlock Defeat and Circumvention

One driver in three (33%) reports that the interlock system on his car has been defeated. Another 13% say they circumvent the system (8% more than half the time, 5% less than half the time). This leaves 54% who report they have not defeated and usually do not circumvent the interlock.

People who defeat or circumvent the interlock system most commonly give the following reasons: the safety belt is physically uncomfortable, it is not necessary on short trips, it is inconvenient to use, or it is something that inspires a generally negative attitude.

Drivers who report that the interlock on their car has been defeated most commonly say the plug (occupant sensor) has been pulled. Men usually say they did this themselves; women say a family member or someone outside the family did it.

Most people who circumvent the interlock claim they were able to discover by themselves how to do it. The commonest methods are to buckle the belt behind one's back, hook the belt to the handle or other protuberance on the door, or start the engine without sitting on the seat.

## 6. Comfort of Safety Belts

Only a minority of drivers (31%) give the shoulder harness in their 1974 car an outright rating of "comfortable." In contrast, 53% rate the lap belt "comfortable."

Chrysler receives more criticism than the other makes on the score of comfort or convenience problems with the safety belt. The main complaints are that the lap belt or shoulder harness locks, or comes up short, when pulled out.

## 7. Accessibility of Safety Belt

About half (53%) of the drivers interviewed say that the accessibility of their safety belt presents no problem. American Motors and General Motors owners give this favorable answer most often.

Overall, about one quarter (23%) of the owners say that accessibility is a minor problem.

Another one quarter say that accessibility is a severe problem (10%) or a moderate problem (14%).

## 8. Malfunction/Failure of Interlock

About one driver in five (19%) reports that his 1974 car has had a malfunction or mechanical failure in the interlock system.

The problem most often mentioned is that the car will not start even after the safety belt has been fastened.

The incidence of reported problems is highest for American Motors and foreign cars.

About half of the drivers who say they have had interlock malfunctions say the problem was readily corrected, usually by the dealer at no charge. The other half are driving their car with the problem still uncorrected.

## 9. Instructions for Use of Safety Belt

Less than half (44%) of the drivers interviewed say they received instructions for the proper use of their safety belt system from the dealer or salesman.

Another 12% say they learned how to operate the system from the owner's manual.

Only 1% learned from a family member or other person.

Thus, 43% of the drivers of 1974 cars had received no particular instruction in use of their safety belt system.

## 10. Discomfort Index

A "discomfort index" was derived from the answers to five separate questions in which drivers had an opportunity to comment on the comfort of their safety belt. The results correlate closely with usage. Drivers who score lowest on the discomfort index have use rates more than twice as high as drivers who score highest on the discomfort index.

No manufacturer stands out from the others in this area. Solving or ameliorating the problems of discomfort remains a challenge to all connected with the automobile industry.

## 11. Rental Car Studies at Airports

These studies were undertaken to provide the earliest possible indications of how the combination lap-and-shoulder belt, with sequential logic and interlock, was being received by motorists. By studying rental cars at airports, it was possible to amass a large amount of data on 1974 model cars quickly, before it was practical to study those cars in the general population of vehicles.

Since the comprehensive study of the general population of vehicles supersedes the rental car studies at airports, results from the earlier work are not summarized here.

## ACKNOWLEDGMENTS

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The authors also appreciate the cooperation of the five rental car companies that participated in the survey -- Hertz, Avis, National, Tilden, and Budget -- and their local personnel at the Miami, Chicago, Los Angeles, and Toronto airports.

Also, we acknowledge the cooperation of personnel in the various State Departments of Motor Vehicles who were involved in the validation task.

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Last but not least, the authors appreciate the cooperation of all the rental car customers and members of the driving public who were the main subjects of the research.

## DETAILED QUANTITATIVE FINDINGS

Throughout the report, tests of statistical significance (at the 95-in-100 confidence level) have been applied. Thus, any statements to the effect that A is larger (or smaller) than B may be taken as having met the test of statistical significance.

Five tables of sampling tolerances are included in the Appendix beginning on page A-13-1. Each table shows (for both observation data and interview data) the number of cases involved in the various subgroups being compared and the approximate level of the percentage difference being tested.

1. General Population of Vehicles -- 19 U.S. Cities

The primary body of data reported herein is based on the following numbers of cases:

- 29,751 verified observations of 1974 model cars
- 8,276 verified observations of 1973 model cars
- 2,226 telephone interviews with owners/drivers of 1974 model cars

Except where otherwise noted, all observational data are based on verified observations, that is, those on which the observer and the DMV (Department/Division of Motor Vehicles) agree on model year.

## Methodology

The stage of the total research effort reported here represents a survey of cars in the traffic population. This stage was itself in two parts -- observations of drivers and front outboard passengers to determine their usage of safety belts, and a follow-up telephone survey among a subsample of observed drivers to obtain further data on attitudes, practices, and characteristics of drivers and cars. (Telephone numbers were derived from the license numbers obtained as part of the observation procedure.)

### Verification of Model Year Through DMV Search

At intervals, when a sufficient number of observations had been obtained, they were put on punch cards for submission to the states by DOT. When the verified data came back to ORC (usually on magnetic tape, but occasionally in the form of computer print-outs), they were first converted to punch card form to permit computer matching with the cards for the original observations; the purpose of this step was to provide a set of usage observations verified as to model year (1974 vs. 1973).

### Selection of Sample Cities

The original plan was to select 20 cities (actually, metropolitan areas) for study in this part of the research. The number was reduced to 19 when one of the cities originally selected was found to be unsuitable as far as obtaining verification data from its state DMV was concerned.

The sample cities were selected on the basis of the following criteria:

- Geographical location -- section of the country
- Population size
- Climate conditions
- Availability of good observer/interviewer staffs

Where possible, preference was given to states which provide that the license of a car that is sold stays with the car, and not with its former owner. This was to maximize the probability that a telephone follow-up interview would be with the owner or driver originally observed, not someone in the family of the car's new owner (if the car was sold between the times of observation and interview).

Following are the 19 metropolitan areas in the sample for the general population of vehicles:

Atlanta, Ga.	Minneapolis-St. Paul, Minn.
Baltimore, Md.	New Orleans, La.
Birmingham, Ala.	New York, N. Y.
Boston-Cambridge, Mass.	Phoenix, Ariz.
Chicago, Ill.	Pittsburgh, Pa.
Fargo-Moorhead, N. D.	Providence, R. I.
Dallas, Tex.	San Diego, Calif.
Houston, Tex.	San Francisco, Calif.
Los Angeles, Calif.	Seattle, Wash.
Miami, Fla.	

#### Sampling Within Cities

In each metropolitan area, the objective was to select representative observation sites on the basis of:

Roadway types

Traffic volume

Downtown vs. outlying locations

To achieve this objective, we worked with maps showing both the city and its outlying areas. The sample area extended approximately five miles beyond the city limits. The maps were then laid out in grid patterns, usually one-inch squares, and a random selection of squares made.

Within each sample square, the supervisor was given a series of eight street intersections which, as far as could be ascertained from the map, provided suitable observation posts.

The supervisor was given some discretion for selecting the actual observation sites within the squares. The preference was for primary street intersections, where there would be a sufficient flow of traffic to make for efficient utilization of the observer's time, but where the traffic would stop from time to time (as at a traffic light) to permit accurate observation of seat belt usage and the car itself. Another consideration was that the observation sites provide maximum safety for the observers, from the viewpoint of both traffic and crime hazards.

In each city, the assignment of interviews was balanced by day of week and time of day.

#### Observation Techniques

Eligible observation hours were 8:30 - 6:30, with a cutoff somewhat earlier in winter months to avoid darkness. Eligible cars were 1974 and 1973 model passenger vehicles registered in the state where the observations were being obtained. (In November and December, 1974, a sample of 1966-1971 model cars also was observed.)

The observers were carefully trained in the techniques to follow, particularly the methods of distinguishing 1974 from other model years and the importance of determining accurately the three categories of safety belt usage we were reporting. The extended bumpers and unique design of the safety belt were aids in the identification of 1974 models. It was stressed that accurate observations required a reasonably close position to the car, so that it was easy to see in -- but all this within the context of safeguarding the observer's security.

The approved technique was to observe the car and its occupants closely from the curb, while the car was stopped. A sign, "Traffic Survey," pasted on the back of the observer's clipboard, and a DOT booklet on road signs to be used as a handout when needed, facilitated the process.

The observer recorded the sex and safety belt usage of the driver and the front outboard passenger; the make, model year, and seat type of the car; the weather conditions at the time; and the license number of the car. This last was to permit a DMV verification of the model year of the car and to provide the name and address of the owner for the telephone interview. Observers were instructed to give priority to 1974 models.

### Telephone Interview Follow-Up

Cars verified through the DMV search as 1974 models were eligible for the follow-up telephone interview study. Since there was more interest in the nonuser group than in the user, but the latter group outnumbered the former, a subsampling of users (usually 1:3) was in effect during most of the study period.

At this point we prepared a computer print-out of names and addresses of users and nonusers for assignment to the field for telephone follow-up. In preparing the listing, we were able to screen out passenger cars owned by car rental and other business firms. From the zip code on the listed address, we were able to eliminate places which, though in the state, were far removed from the sample cities and would have required costly toll calls to reach.

The next step was for the field personnel to look up, or try to obtain through Directory Assistance, the telephone numbers of the people whose names and addresses we had given them. Naturally, there was some attrition at this point because of unlisted numbers, discontinued numbers, etc.

Finally, from the list of telephone numbers obtained, telephone interviews were conducted. The listing sheet noted the sex of the person observed, and the interviewer was instructed to ask for a male/female respondent, accordingly, in the household being contacted. No doubt there were times when this rule did not produce an interview with the person observed, but rather with another person of the same sex in that household. The extent of this problem cannot be ascertained.

It should also be pointed out that the behavior of the respondent in the observation situation may have been atypical compared with his/her more generalized behavior reported in the interview.

Following are the main subjects covered in the telephone interview:

Attitudes toward safety belts

Behavior and practices: reported usage, defeating or circumventing the system

Ratings of the system on comfort and accessibility

Reliability of the system

How learned to use the system

Descriptive data, including some anthropometric data

Findings Based on Observational Data

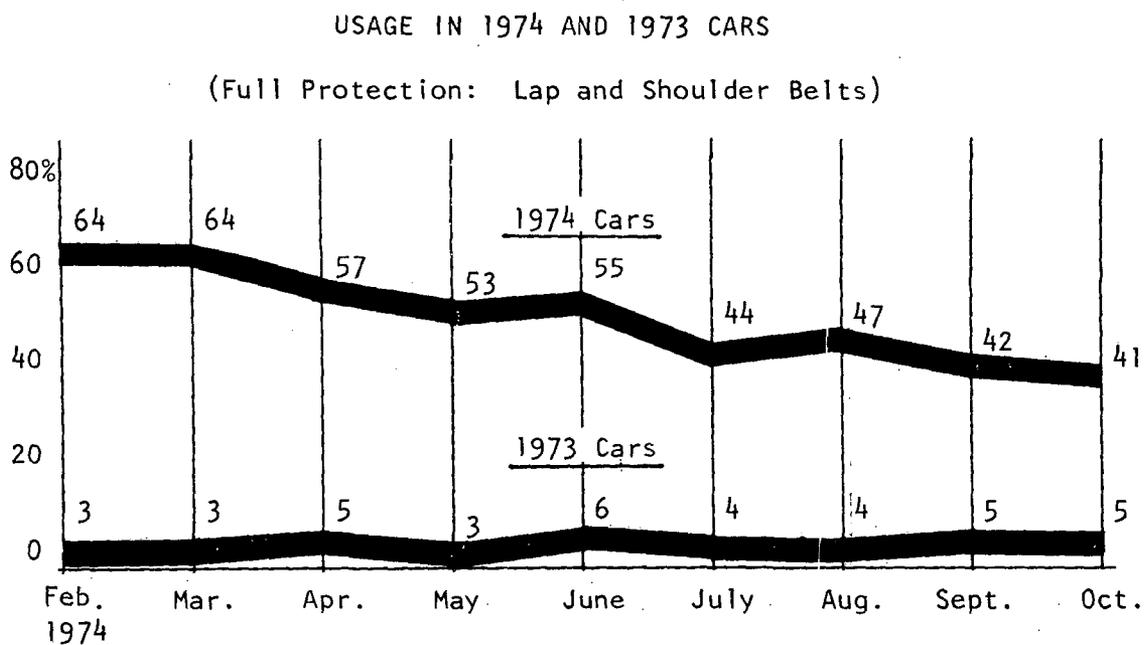
(Except where otherwise indicated, all observational data reflect agreement between the observer and the DMV on model year.)

Monthly Trends in Usage

Monthly usage data for 1974 cars in the general population of vehicles show a generally declining trend during the period February - October, 1974. Starting at the 64% level (for drivers and passengers wearing both the lap and shoulder belt), the usage figure dropped to 41% by October. Thus, a decline of twenty-three percentage points in usage occurred over the 9-month period in which verified data are available.

Usage data for 1973 cars remained relatively steady over the same 9-month period, fluctuating within a range of 3% to 6%.

Figure 1



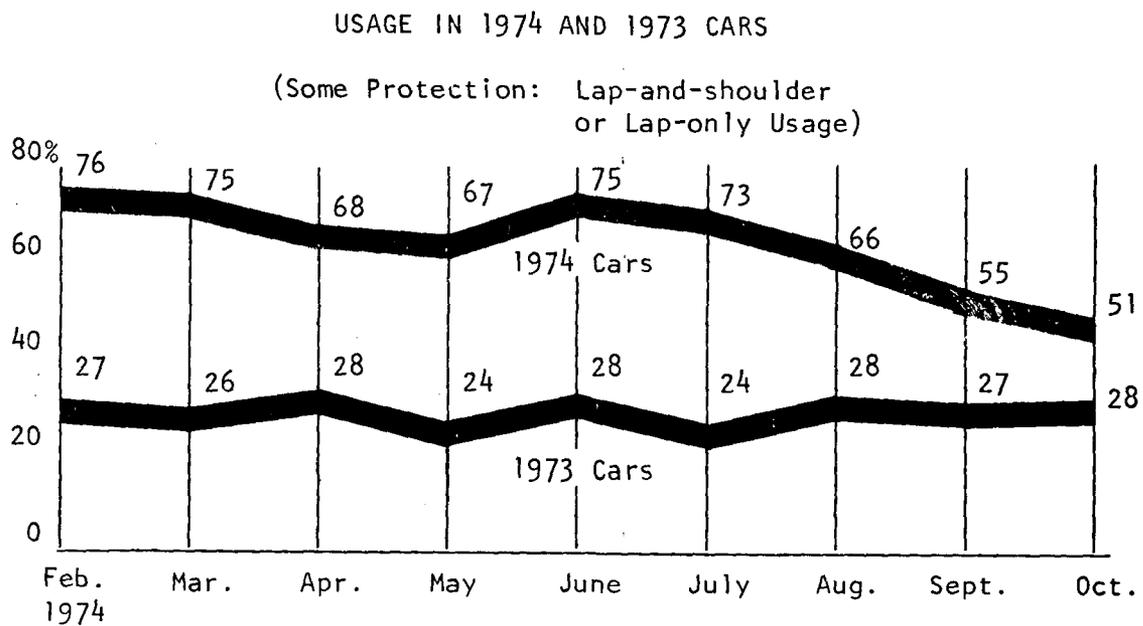
(Drivers plus Passengers)

Total N { 1974 cars = 29,751  
1973 cars = 8,276

When usage is defined more broadly (lap and shoulder belt, or lap belt only), the trend for 1974 cars again is down over the course of the 9-month period. From a level of 76% in February, 1974, usage declined to 51% in October, 1974.

Under this same definition of usage, the figures for 1973 cars ranged from 24% to 28%, and again the slope of the trend line is relatively flat.

Figure 2



(Drivers plus Passengers)

Total N { 1974 cars = 29,751  
1973 cars = 8,276

### Trends in Verified vs. Unverified Data

In general, the verified and unverified usage figures closely parallel each other, month by month, for the available period, as shown in Figures 3 and 4.

This, of course, permits a high degree of confidence in the unverified data, which have the advantage over verified data of being more up-to-date and providing a means of quick reporting to DOT. There is a considerable time lag between the submitting of license numbers to the DMV's and their return for tabulating purposes.

The results shown in Figure 3 reflect usage according to the concept of full protection -- both lap and shoulder belts worn.

The data presented in Figure 4 reflect usage according to the concept of some protection -- lap-and-shoulder and lap-only usage.

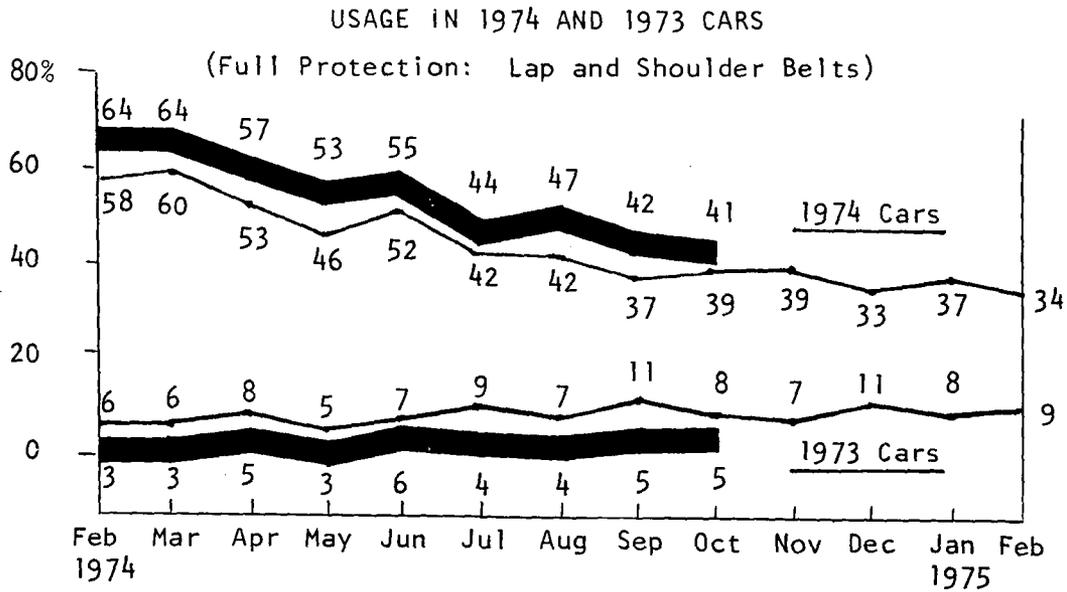
Note: The number of verified cases is smaller than the number of unverified cases for the following reasons:<sup>1/</sup>

- Some of the cars reported by observers as 1974 or 1973 models drop out because the DMV's report them as pre-1973 models.
- Some of the license numbers reported by observers cannot be located by the DMV's in their files.
- For a case to be considered "verified" in our analysis, both the observer and the DMV must agree that it is a 1974 model, or a 1973 model, as the case may be.

In both Figures 3 and 4, the 1974 verified data are higher than the unverified data because observers reported some cars as 1974 models that actually were 1973 models (which have lower usage rates). Conversely, in both Figures, the 1973 verified data are lower than the unverified data because observers reported some cars as 1973 models that actually were 1974 models (which have higher usage rates). As shown in Figures 5 and 6, the relationship holds invariably for the "both on" data, but not for the "lap only" data, which fluctuate in a more random manner.

<sup>1/</sup> For further details, see section in Appendix, "Verified vs. Unverified Observations."

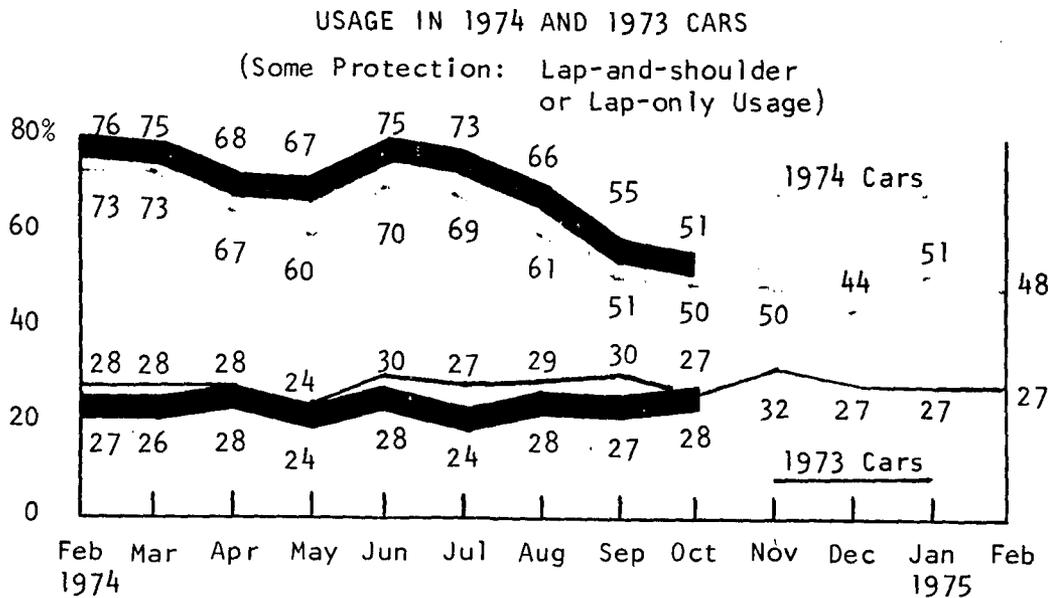
Figure 3



(Drivers plus Passengers) Total N

	Verified	Unverified
1974 cars = 29,751	65,927	—
1973 cars = 8,276	22,980	—

Figure 4



(Drivers plus Passengers) Total N

	Verified	Unverified
1974 cars = 29,751	65,927	—
1973 cars = 8,276	22,980	—

Detailed Usage Rates, by Month

Figure 5, below, and Figure 6, opposite, provide supporting data for the charted material on usage trends in Figures 1-4.

Figure 5

## USAGE IN 1974 MODEL CARS

	<u>Verified<sup>1/</sup></u>				<u>Unverified<sup>2/</sup></u>			
	<u>Total</u>	<u>Both On</u>	<u>Lap Only</u>	<u>Both Off</u>	<u>Total</u>	<u>Both On</u>	<u>Lap Only</u>	<u>Both Off</u>
February 1974	1,374	64%	12	24	2,189	58%	15	27
March	2,357	64%	11	25	3,806	60%	13	27
April	2,561	57%	11	32	4,290	53%	14	33
May	3,562	53%	14	33	5,345	46%	14	40
June	3,528	55%	20	25	5,616	52%	18	30
July	4,086	44%	29	27	6,041	42%	27	31
August	3,691	47%	19	34	5,568	42%	19	39
September	3,955	42%	13	45	6,548	37%	14	49
October	4,637	41%	10	49	7,746	39%	11	50
November	-	-	-	-	4,424	39%	11	50
December	-	-	-	-	5,379	33%	11	56
January 1975	-	-	-	-	4,863	37%	14	49
February	-	-	-	-	4,112	34%	14	52

(See page opposite for footnotes.)

Figure 6

## USAGE IN 1973 MODEL CARS

	Verified <sup>1/</sup>				Unverified <sup>2/</sup>			
	Total	Both On	Lap Only	Both Off	Total	Both On	Lap Only	Both Off
February 1974	749	3%	24	73	1,401	6%	22	72
March	1,079	3%	23	74	1,829	6%	22	72
April	1,018	5%	23	72	1,837	8%	20	72
May	988	3%	21	76	1,758	5%	19	76
June	951	6%	22	72	1,616	7%	23	70
July	869	4%	20	76	1,475	9%	18	73
August	879	4%	24	72	1,486	7%	22	71
September	893	5%	22	73	1,741	11%	19	70
October	850	5%	23	72	1,845	8%	19	73
November	-	-	-	-	1,667	7%	25	68
December	-	-	-	-	1,624	11%	16	73
January 1975	-	-	-	-	2,545	8%	19	73
February	-	-	-	-	2,156	9%	18	73

<sup>1/</sup> Observer and DMV agree on model year.

<sup>2/</sup> Model year as reported by observer.

Note: All data in Figures 5 and 6 are for drivers and passengers combined.

Usage in 1974, 1973, and Pre-1972 Models

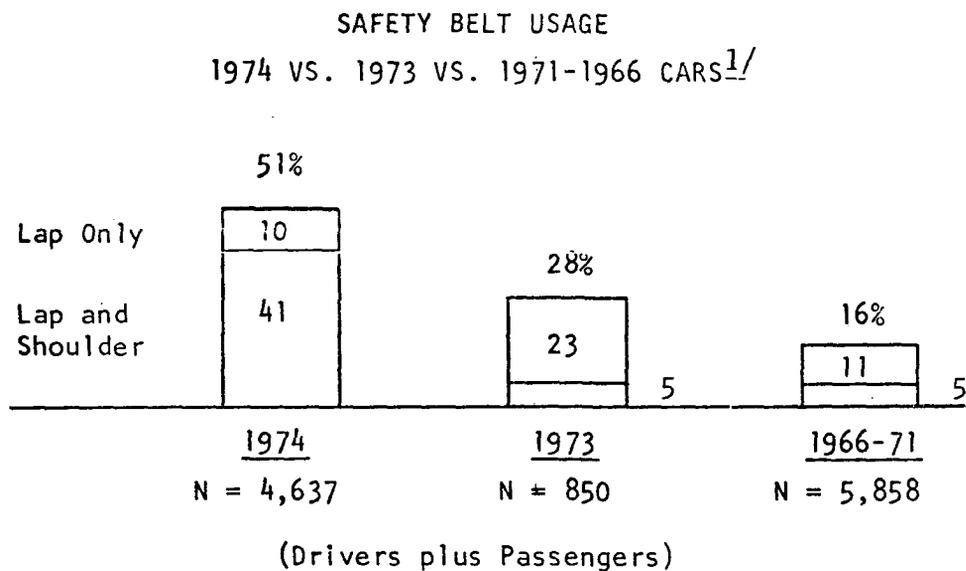
Seat belt usage in pre-1972 cars lags far behind usage in 1974 and 1973 cars.

Figure 7 below puts into perspective the marked increase in seat belt usage as the protection systems changed from no or slight warning (pre-1972), to light-and-buzzer warning (1973), to interlock (1974).

Note that the increase in overall usage from pre-1972 to 1973 models is due mainly to improvement in the lap-belt-only usage rate (an increase from 11% to 23%).

The further improvement in overall usage in 1974 was due to the sharp increase in the proportion of people with full protection. The increase in the both-on usage rate from 1973 to 1974 was eight-fold (from 5% to 41%).

Figure 7



<sup>1/</sup> The observations of 1966-1971 cars reported here were made in November 1974 and represent unverified data. To keep the time periods as comparable as possible, usage for 1974 and 1973 models is shown only for observations made in October 1974 (the latest month for which verified data are currently available).

Drivers vs. Passengers, and Sex of Driver

Combining all the verified data available (February - October, 1974), usage of safety belts is very similar for drivers and passengers, and men and women drivers.

In terms of both full protection and some protection, however, the reported percentages for passengers are five points lower than those for drivers.

Figure 8

USAGE IN 1974 CARS (February - October, 1974)				
	Lap and Shoulder	Lap Only		<u>N</u>
Total	50	16	66%	29,751
Drivers	51	16	67%	22,260
Passengers	46	16	62%	7,491
<u>Drivers:</u>				
Men	52	15	67%	15,499
Women	51	17	68%	6,761

### Usage by Manufacturer

As in the study at airports, the main finding in the analysis of usage by manufacturer is the relatively low standing of Chrysler. This is true whether the results are viewed in terms of full protection (both lap and shoulder belt on) or in terms of some protection (both on, or lap belt only).

In terms of full protection, foreign cars score higher (62%) than American Motors (54%), General Motors (51%), Ford (47%), and Chrysler (38%).

Except for Chrysler, the percentages reported for the classification "some protection" are in a much narrower range than are those for the classification "full protection" (70% for foreign cars to 62% for Ford).

Figure 9

USAGE IN 1974 CARS (February - October, 1974)				
	Lap and Shoulder	Lap Only		N
Foreign	62	8	70%	1,333
G.M.	51	18	69%	16,211
AMC	54	11	65%	994
Ford	47	15	62%	9,106
Chrysler	38	8	46%	1,787

For each manufacturer, usage declined significantly between the first and fourth quarters of 1974. This is true whether the data are looked at in terms of full protection or some protection. In the fourth quarter, Chrysler's usage scores of 32% for full protection and 38% for some protection are lowest of the different manufacturers.

Figure 10

USAGE IN 1974 CARS

(Full Protection: Lap and Shoulder Belts)

	<u>AMC</u>	<u>Chrys.</u>	<u>Ford</u>	<u>G.M.</u>	<u>For.</u>
<u>1974</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
1st Qtr.	67	54	61	65	73
2nd	58	49	52	56	64
3rd	49	31	42	46	61
4th	49	32	41	42	53
	N = 994	1,787	9,106	16,211	1,333

Figure 11

USAGE IN 1974 CARS

(Some Protection: Lap-and-shoulder  
or Lap-only Usage)

	<u>AMC</u>	<u>Chrys.</u>	<u>Ford</u>	<u>G.M.</u>	<u>For.</u>
<u>1974</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
1st Qtr.	72	60	74	77	78
2nd	70	59	67	73	73
3rd	61	39	60	70	70
4th	58	38	50	53	59
	N = 994	1,787	9,106	16,211	1,333

### Usage by Weight Class, Type of Seats, and Number of Doors

The smaller and lighter the car, the greater the usage of seat belts. This is true whether usage is measured in terms of full protection (both on) or some protection (both on, or lap belt only).

Likewise, usage (measured in terms of full protection) is ten percentage points higher in cars with bucket seats than those with bench seats.

These results are interrelated, since bucket seats are more often found in smaller cars than larger.

Two reasons, admittedly speculative, may account for these relationships:

- (1) Persons in smaller, lighter cars may perceive themselves to be in greater danger, and therefore in greater need of safety belt protection, than persons in larger, heavier cars.
- (2) Safety belts may be easier to use in cars with bucket seats than in cars with bench seats.

Number of car doors is less of a factor in safety belt usage than weight class or type of seats. Usage (measured in terms of full protection) is virtually the same for two-door cars as for four-door cars. The data do, however, show somewhat higher usage in four-door cars than in two-door cars when the criterion of some protection is used (both on, or lap belt only).

Figure 12

USAGE IN 1974 CARS  
(February - October, 1974)

	Lap and Shoulder	Lap Only		<u>N</u>
Sub-Compact	57	13	70%	4,134
Compact	51	14	65%	7,426
Intermediate	47	18	65%	7,704
Standard	45	21	66%	5,307
Luxury	43	19	62%	1,876
Bucket	56	14	70%	13,183
Bench	46	17	63%	16,422
Four Door	45	18	63%	3,545
Two Door	43	14	57%	9,764





Findings Based on Interview Data

Observed vs. Reported Usage

Usage reported in the follow-up telephone interview closely matches usage of all drivers of 1974 cars in the observational study. This close correspondence suggests that in most cases we interviewed the person who was observed, and that testimony closely reflects behavior.

Figure 14

OBSERVED VS. REPORTED USAGE

(Drivers of 1974 Cars)

33%	Both Off	35%
16	Lap Only	14
51	Lap and Shoulder	51
Observed N = 22,260		Reported N = 2,057

### Overall Attitude Toward Interlock System

In the telephone follow-up interviews among drivers of 1974-model cars, overall attitudes toward the safety belt interlock system are more unfavorable than favorable, in the ratio of 59% to 36%. Only 5% have no opinion.

The question asked was as follows:

"As you know, 1974 cars have a Safety Belt Interlock System which is designed to prevent starting the engine unless the safety belt is fastened. Would you describe your general impression of the Safety Belt Interlock System as favorable, or unfavorable, or don't you have an impression one way or the other?"

Figure 15 also indicates that behavior and attitudes toward safety belts are correlated. Drivers who report that they usually wear both the lap and shoulder belt are favorable to the interlock system in the proportion of 54%. Those who report that they usually drive with both the lap and shoulder belt off are unfavorable in the proportion of 87%.

It is significant to note, however, that a substantial proportion of drivers who have an unfavorable opinion of the interlock system report that they do wear their safety belt.

Figure 15

OVERALL ATTITUDE TOWARD INTERLOCK SYSTEM				
	Favorable	Unfavorable	No Opinion	N
Total Drivers	36%	59	5	2,226
<u>Reported Usage:</u>				
Lap and Shoulder	54%	41	5	1,058
Lap Only	33%	60	7	279
Both Off	9%	87	4	720

Note: These and the following findings from the follow-up telephone study all refer to drivers only; no passengers were interviewed in the telephone study.

Overall Attitude, by Sex and Age

As foreshadowed by the findings on usage, men and women drivers are almost identical in the proportions holding favorable and unfavorable attitudes regarding the interlock system.

On age, the story is different. Drivers under 50 are more favorable in their attitudes than those 50 years or over. The percentage of "favorable" ratings is more than half again as high in the younger group as in the older.

The difference in attitudes by age would seem to bode well for greater acceptance of safety belts, or some other restraint system, in the future. Assuming that younger people do not become more critical of safety belts as they grow older, the dying off of the older group will make room for a generation more accepting of the idea of safety belt protection.

Figure 16

OVERALL ATTITUDE TOWARD INTERLOCK SYSTEM

	Favorable	Unfavorable	No Opinion	<u>N</u>
Men	36%	60	4	1,368
Women	37%	58	5	858
Under 25 yrs.	46%	50	4	352
25-39 yrs.	41%	53	6	762
40-49 yrs.	34%	60	6	443
50 yrs. or over	26%	70	4	627

Usage, by Age and Mileage Driven

Usage, as reported in the telephone interview, again shows a relationship to age: in terms of full protection (lap and shoulder), the youngest drivers report the highest usage, the oldest drivers the least. The two age groups, however, do not differ significantly in terms of some protection (59% vs. 56%).

Reported usage is lower for people who drive 20,000 miles a year or more than for those who drive less than 20,000 miles. This is an unfortunate relationship, for those with the greatest exposure to risk have the least protection.

Figure 17

USAGE BY AGE

	<u>Lap and Shoulder</u>	<u>Lap Only</u>	<u>N</u>
Under 25 years	51%	8	352
25-39	52%	11	762
40-49	44%	15	443
50-59	45%	15	387
60 and over	40%	16	240

Figure 18

USAGE BY ANNUAL MILEAGE

	<u>Lap and Shoulder</u>	<u>Lap Only</u>	<u>N</u>
Under 10,000 miles	49%	15	815
10,000-14,999	50%	12	698
15,000-19,999	51%	10	279
20,000 and over	41%	10	389

### Interlock Defeat and Circumvention

More than half of the drivers interviewed in the telephone survey say the safety belt in their 1974 car functions as intended. One-third say they have defeated the system (rendered it inoperative), and 13% say they circumvent it (8% more than half the time, 5% less than half the time).

Following are the questions asked:

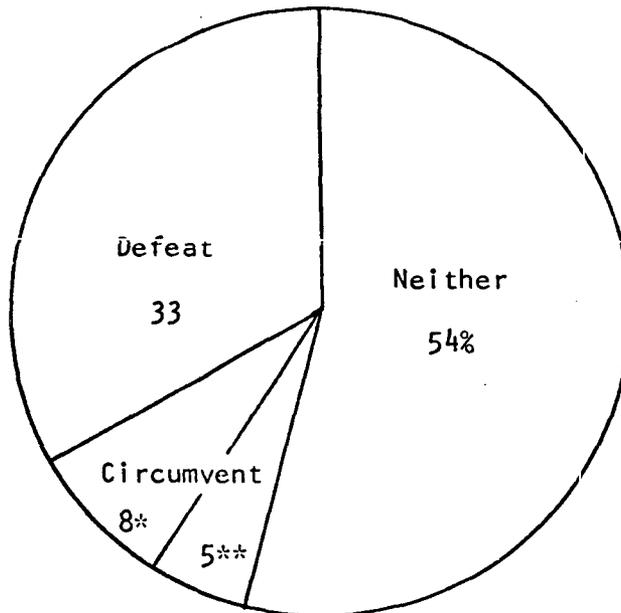
"Has the Safety Belt Interlock System in your car been defeated? By defeated, we mean that the system has been made inoperative by disconnecting a plug or cutting the wires, etc."

"Do you circumvent the Safety Belt Interlock System? By circumvent, we mean 'fooling' the system, such as by fastening the combination lap and shoulder belt behind you, hooking the belt to the door handle, etc."

"How often do you circumvent or 'fool' the Interlock System so that you don't have to fasten the safety belt? Would you say almost always, more than half the time, less than half the time, or almost never?"

Figure 19

#### INTERLOCK DEFEAT AND CIRCUMVENTION



N = 2,226

\* More than half the time

\*\* Less than half the time

Defeat and Circumvention, by Mileage Driven and Income

The greater the annual mileage driven (15,000 miles and over), the more likely the driver is to report that the safety belt system has been defeated. Again, this represents a problem, in that those most exposed to the risks are least protected.

Also, drivers with family incomes of \$15,000 and over are more likely to report the system has been defeated than are those with family incomes under \$15,000. This may reflect the ownership by higher-income people of the larger, heavier cars, in which safety belt usage drops off. We are unable to test this speculation, because the telephone interview obtained data only on manufacturer, not model.

Figure 20

DEFEAT AND CIRCUMVENTION BY ANNUAL MILEAGE

	<u>Defeat</u>	<u>Circumvent</u> <sup>1/</sup>	<u>N</u>
Under 10,000 miles	28%	8%	815
10,000-14,999	32%	9%	698
15,000-19,999	38%	6%	279
20,000 and over	43%	10%	389

<sup>1/</sup> More than half the time

Figure 21

DEFEAT AND CIRCUMVENTION BY FAMILY INCOME

	<u>Defeat</u>	<u>Circumvent</u> <sup>1/</sup>	<u>N</u>
Under \$7,000	23%	8%	133
\$7,000-\$10,000	26%	8%	209
\$10,000-\$15,000	32%	9%	567
\$15,000-\$20,000	38%	9%	376
Over \$20,000	40%	7%	491

<sup>1/</sup> More than half the time

Defeat of the safety belt system increases over time: 30% of drivers who have owned their 1974 car 1-6 months report this, compared with 40% of drivers who have owned their car 15-18 months.

Reasons for Defeating/Circumventing Interlock

When asked to tell, in their own words, why the interlock system is being bypassed, drivers mention inconvenience and physical discomfort most often. These problems appear worthy of priority attention by those who can affect belt design.

The next biggest reason is "short trips" -- the belief that local driving does not require the same safety measures as high-speed, free-way driving. Here, and for the feeling of skepticism regarding the value of belts as a safety measure, the countermeasure appears to be driver education.

The table below lists other types of resistance to safety belts, some of them psychological in nature, that may be more difficult to overcome than those of belt design or driver information.

Figure 22

REASONS FOR DEFEATING  
OR CIRCUMVENTING INTERLOCK

Drivers who report system defeated or circumvented	<u>46%</u>
Inconvenient	12%
Physical discomfort	12
Short length of trips: in and out of car often	11
General negative attitude	10
Feeling of being trapped	8
Want to be able to start engine for special purpose: warm up, work on engine, move in driveway	6
Opposed on principle	5
Dislike buzzer	4
Doubt value as safety measure	4
Too lazy to use belt, too much trouble	4

(Main reasons)

N = 1,039 out of 2,226<sup>1/</sup>

<sup>1/</sup> Here, and in similar cases, the smaller N refers to the number of cases in the subtotal group (in this case 46%) out of the total number of cases (here 2,226) on which the percentages are based.

Methods of Defeating/Who Defeated Interlock

As shown in Figure 23, the interlock system is usually defeated by disconnecting the occupant sensor plug.

As shown in Figure 24, men most usually defeat the interlock themselves, and women most usually say that a family member defeated the interlock.

Figure 23

METHODS OF DEFEAT

Drivers who report interlock defeated	<u>33%</u>
Disconnect plug (occupant sensor)	23%
Cut wires	2
Other	1
Don't know	7

N = 743 out of 2,226

Figure 24

PERSON WHO DEFEATED INTERLOCK

	<u>Total</u>	<u>Men</u>	<u>Women</u>
Drivers who report interlock defeated	<u>33%</u>	<u>36%</u>	<u>30%</u>
Self	16%	24%	5%
Family member	5	1	11
Mechanic	4	3	5
Friend	3	3	4
Dealer, salesman	3	3	3
Other, not reported	3	3	2
N (out of 2,226) =	743	488	255

### Attitudes Toward Future Defeat of Interlock

Drivers who reported their interlock had not been defeated were asked if they would like to defeat it.

Adding together drivers who say the interlock system on their car has been defeated (33%) and those who say it has not been but they would like to defeat it (23%), over half (56%) of the drivers studied are in one of these negative groups.

On the other hand, 39% say the interlock system on their car has not been defeated and they do not want it to be.

Those who say they would like to defeat the interlock system but haven't done so cite a variety of reasons -- haven't got around to it, too complicated, etc. (See Figure 26.)

Figure 25

#### ATTITUDE TOWARD DEFEAT OF INTERLOCK

Would you like to defeat  
interlock in your car?

Drivers who report interlock not defeated	<u>67%</u>
Yes, would like to	23%
No, would not	39
No opinion	5

N = 1,230 out of 1,836

Figure 26

#### REASONS FOR NOT DEFEATING INTERLOCK

Drivers who say they would like to defeat interlock	<u>23%</u>
Never got around to it	8%
It's too complicated	5
Might damage ignition	4
Against the law	2
Other	4

N = 422 out of 1,836

Methods of Circumventing Interlock, and How Learned

Drivers who circumvent the interlock report most often that they buckle the belt behind their back or that they hook the belt to the door handle, window crank, etc. Several other methods of circumventing the interlock are shown in Figure 27, below, and the "Other" category includes the idea of wearing the shoulder belt under the arm.

Figure 27

METHODS OF CIRCUMVENTING

Drivers who report circumventing interlock	<u>13%</u>
Buckle belt behind back	4%
Hook belt on door handle, knob, etc.	4
Start engine without sitting on seat	1
Use latch plate from other belt	1
Sit on or tuck in seat	1
Other	2

N = 296 out of 2,226

Drivers who circumvent the interlock (13% of all drivers) claim most often to have learned themselves how to do it. When someone else showed them, it was most often a friend rather than a dealer, salesman or a mechanic.

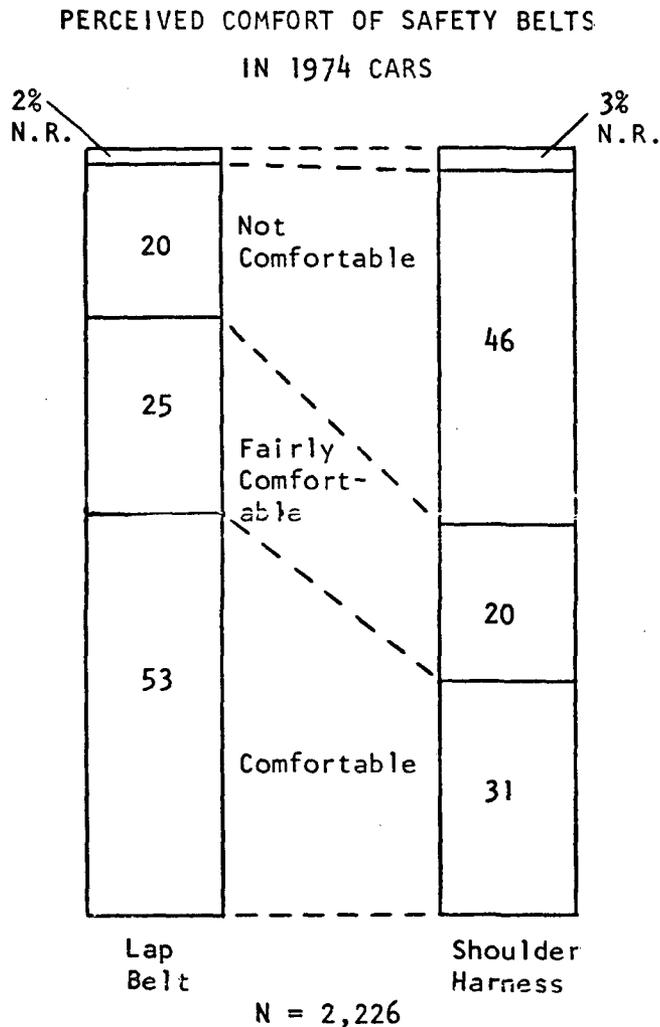
### Comfort of Lap Belt and Shoulder Harness

Drivers see the lap belt as more comfortable than the shoulder harness.

About half (53%) rate the lap belt in their 1974 car "comfortable," but only about one-third (31%) rate the shoulder harness "comfortable." More drivers rate the shoulder harness "not comfortable" than rate it "comfortable."

Aside from any problems of design, it may be that people find shoulder belts more uncomfortable than lap belts because they are less familiar with shoulder belts. If newness is a factor, comfort ratings of shoulder belts should tend to rise, even aside from design improvements, as time passes.

Figure 28



### Comfort/Convenience Problems

When asked to describe any problems related to the comfort and convenience of their safety belt, one-half of 1974 car drivers answer, "No problems."

The problems listed in the table below were obtained in response to a question asked near the end of the interview, as follows:

"Could you describe any particular problem you have had related to comfort and convenience aspects of the safety belt in your 1974 car?"

The problem mentioned most often concerns the shoulder belt's rubbing across the neck or face. This problem appears fairly widespread, but Chrysler owners mention it least often.

Chrysler's favorable rating ("No problems") is pulled down mainly by the answers owners give about the seat or shoulder belt's locking -- coming up short or locking before the belt/harness is all the way out.

Figure 29

#### MAIN PROBLEMS WITH COMFORT/ CONVENIENCE OF 1974 BELTS

	<u>Total</u>	<u>AMC</u>	<u>Chrys.</u>	<u>Ford</u>	<u>G.M.</u>	<u>For.</u>
No problems	51%	53%	44%	50%	51%	59%
Shoulder belt rubs across neck/face	10	7	2	13	11	10
Shoulder belt restrains body movement	8	10	5	10	8	7
Lap belt locks; comes up short	7	6	17	7	6	5
Hard to fasten belt parts together	7	6	8	8	6	5
Hard to get into back seat	4	6	3	6	3	5
Shoulder belt locks; comes up short	4	2	16	3	3	3
	N = 2,226	138	185	607	1,117	146

Accessibility of Safety Belt

About half of the drivers studied say that the accessibility of their safety belt presents no problem. In the case of Chrysler, however, the proportion who report accessibility is no problem drops to 39%.

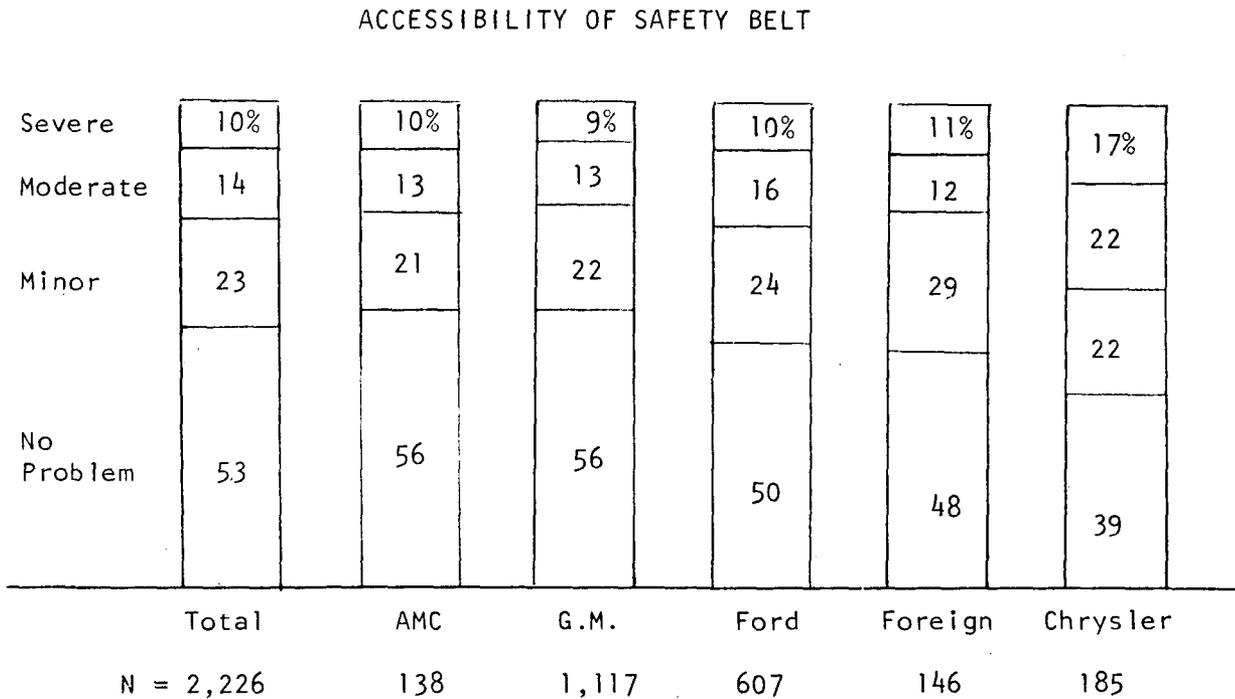
Overall, 10% of owners say accessibility is a "severe problem," and, when those saying "moderate problem" (14%) are added in, about one-quarter of the owners are giving one of these least favorable ratings.

The combined "severe" and "moderate" rating for Chrysler (39%) is significantly higher than the combined scores for each of the other four manufacturers.

These findings are in answer to the question:

"How would you rate the safety belt on accessibility -- that is, being able to take hold of the buckle, pull it out of the reel, and fasten the belt? Would you say this operation presents . . .?"

Figure 30



### Malfunction/Failure of Interlock

About one driver in five (19%) reports a malfunction or mechanical failure in his car's starter interlock system.

The incidence of malfunctions/failures does not differ greatly by make of car.

The favorable showing of Chrysler owners may appear surprising in view of the large proportion, cited earlier, who report problems of comfort or convenience. Apparently, as owners see it, Chrysler's problems are more with ease of use than with mechanical functioning.

The main problem cited is that the car will not start even after the seat belt has been fastened. Overall, 9% of drivers say this. Two percent of drivers cite the opposite problem: car will start without fastening the seat belt.

Other problems mentioned are scattered. Three percent of drivers cite problems with the buzzer. Included in the "other" category are problems involving the warning light (staying on even when belt is fastened properly) and problems with the belt (comes up short, slips, tangles).

Figure 31

#### REPORTED MALFUNCTION OR FAILURE OF INTERLOCK

	<u>Total</u>	<u>AMC</u>	<u>Chrysler</u>	<u>Ford</u>	<u>G.M.</u>	<u>Foreign</u>
No problems	81%	75%	83%	81%	81%	77%
<u>Problems:</u>	<u>19</u>	<u>25</u>	<u>17</u>	<u>19</u>	<u>19</u>	<u>23</u>
Car will <u>not</u> start even after seat belt has been fastened	9	16	6	8	8	14
Problems with buzzer	3	6	2	4	3	2
Car <u>will</u> start without fastening seat belt	2	0	2	2	2	1
Other, not reported	6	4	7	6	6	7
	N = 2,226	138	185	607	1,117	146

Malfunctions are more likely to occur as the car grows older: 17% of those who have driven their car 1-6 months report malfunctions; 26% of those who have driven their car 15-18 months report malfunctions.

#### Correction of Malfunction/Failure

Of the 19% of drivers who report a mechanical problem with their car's interlock system, about half say it has been corrected (most usually by the dealer, his mechanic, or a family member). The other half say it has not been corrected -- they are driving the car in spite of the defect.

In answer to a separate question, virtually all of the people who had the problem corrected say this involved no cost to them.

Moreover, when the problem was corrected, in half the cases this required less than four hours. Most of the remaining cases required no more than two days, at most.

Figure 32

#### CORRECTION OF MALFUNCTION/FAILURE

Drivers who report a problem	<u>19%</u>
Corrected by dealer/mechanic	6%
Corrected by respondent/family member	4
Problem not corrected -- driving car anyway	9

N = 429 out of 2,226

### Instructions for Use of Safety Belt

Overall, slightly over half (57%) of owners say they received any kind of instruction for the proper use of their safety belt system; 43% say they received no instruction of any kind.

For all makes of cars combined, 44% of drivers say they received personal instructions from the dealer or salesman. This percentage ranges from 47% of foreign car owners to 41% of Ford owners.

Another 12%, overall, say they learned how to operate the system from the owner's manual.

Figure 33

#### INSTRUCTIONS FOR PROPER USE OF SAFETY BELT

	<u>Total</u>	<u>AMC</u>	<u>Chrysler</u>	<u>Ford</u>	<u>G.M.</u>	<u>Foreign</u>
Received instructions	<u>57%</u>	<u>62%</u>	<u>56%</u>	<u>57%</u>	<u>58%</u>	<u>53%</u>
Personal instructions from dealer/salesman	44	43	43	41	46	47
Instruction manual in car	12	16	12	14	12	4
Family member, friend, other	1	2	3	1	2	2
Received no instructions	43	38	44	43	42	47
	N = 2,226	138	185	607	1,117	146

The 43% of drivers who received no personal or written instruction are probably a cause for concern, but the solution is not too readily apparent. Many drivers interviewed in this study are not the person who purchased the car or picked it up when it was ready for delivery. In these cases the dealer or salesman had no opportunity to provide personal instruction to this member of the family.

Perhaps dealers could be encouraged to urge buyers to pass the instructions on to their family members or urge them to read the manual.

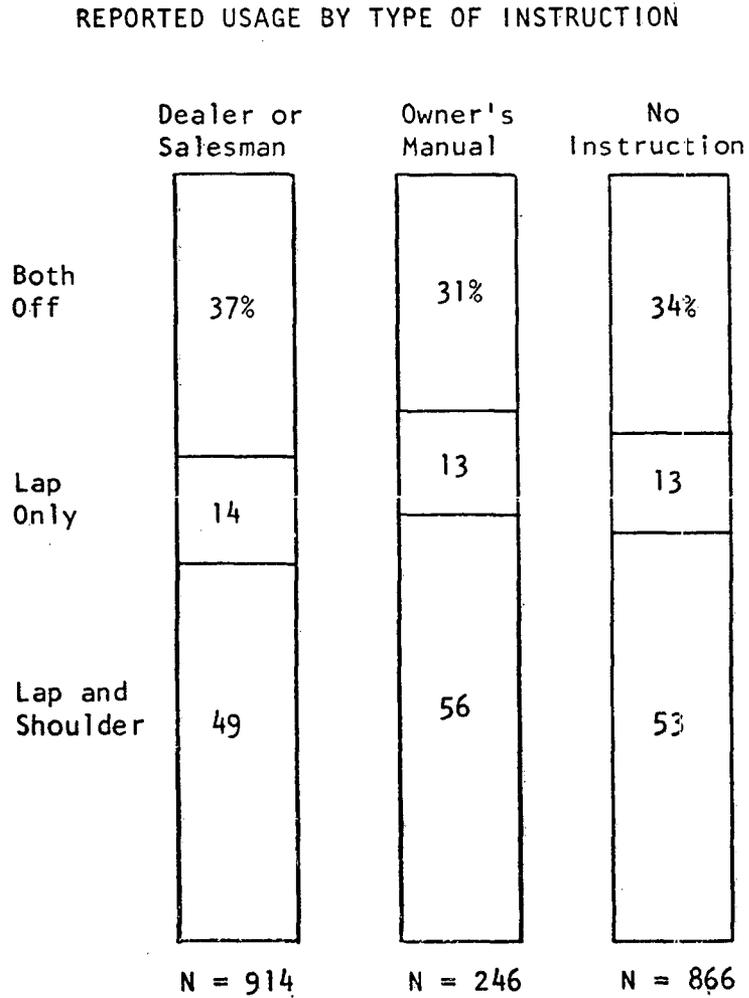
There may also be a place for Government bodies, safety associations, etc., to carry forward the "how-to," as well as the "why," instructional task.

Usage, by Type of Instruction

Safety belt usage does not differ significantly according to whether the driver received instructions from the dealer or salesman, or from the owner's manual, or received no instructions.

With more cases it might be possible to determine whether the owner's manual really produces better results, in terms of usage, than personal training by the dealer or salesman, as the data now available suggest.

Figure 34



Discomfort Index

As a means of studying further the important relationship between comfort and usage of the safety belt system, we developed a "discomfort index," based on the answers drivers of 1974 model cars give on the following five items:

	<u>Number</u>	<u>Percent</u>
Say the shoulder belt rubs across face or neck	229	10%
Say the interlock system has been by-passed because of physical discomfort	270	12%
Say they usually wear the shoulder harness under the arm or behind the back because of physical discomfort	274	12%
Say the lap belt portion of the safety belt is not comfortable to wear	442	20%
Say the shoulder harness is not comfortable to wear	1,036	46%

The number and percent of drivers in each of the four categories of the "discomfort index" is as follows:

	<u>Number</u>	<u>Percent</u>
<u>High Discomfort</u>		
Those who give three or more negative responses	257	12%
<u>Moderate Discomfort</u>		
Those who give two negative responses	488	22
<u>Low Discomfort</u>		
Those who give one negative response	456	20
<u>No Discomfort</u>		
Those who give no negative responses	1,025	46

Thus, in terms of the "discomfort index," a majority of drivers (54%) are classified in one of the three levels of discomfort.

Usage, by Discomfort Index

Usage of the safety belt is closely related to the driver's score on the discomfort index.

On the basis of "some protection" -- lap and shoulder belt or lap only -- usage ranges from 75% for drivers who report no discomfort to 35% for those who score "high" on the discomfort scale. Those who score "moderate" or "low" have intermediate use rates.

The same perfect step relationship is evident if we look at the results in terms of "full protection" -- lap and shoulder belt. Here the range in usage is 72% for those reporting no discomfort to only 7% for those in the "high" discomfort category.

Figure 35

USAGE BY DISCOMFORT INDEX				
<u>Discomfort Index</u>	Lap and Shoulder	Lap Only		<u>N</u>
High	7	28	35%	257
Moderate	24	21	45%	488
Low	41	16	57%	456
No Discomfort	72		75%	1,025

This is an important chart. It clearly implies that correcting or improving discomfort problems should lead to greater safety belt usage.

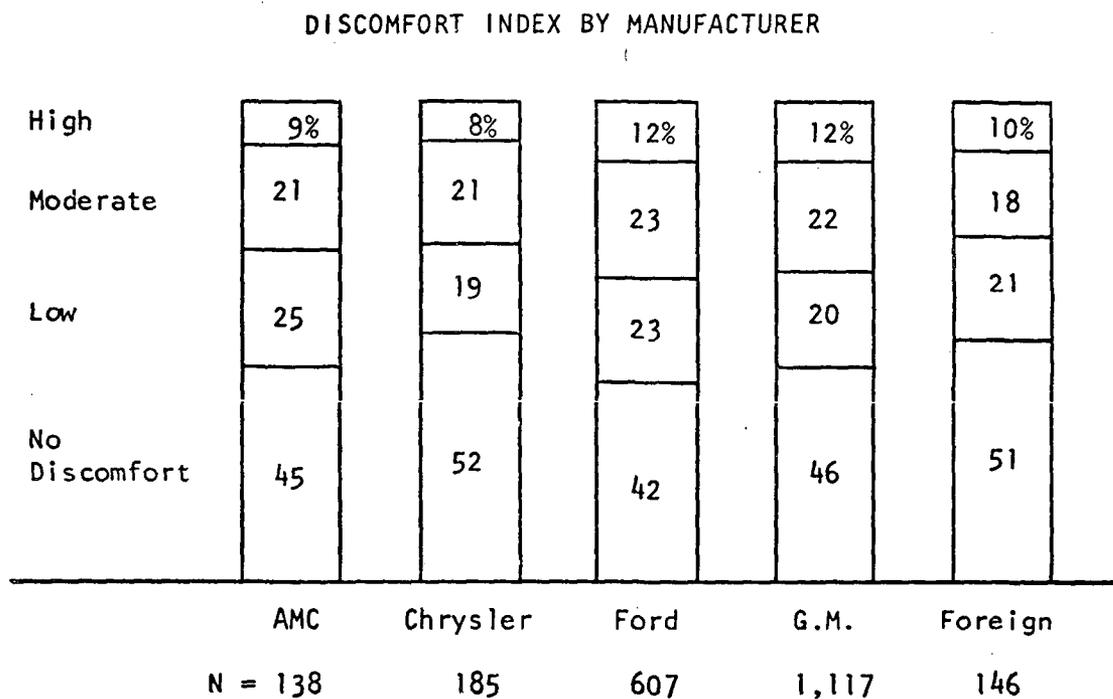
### Discomfort Index, by Manufacturer

No manufacturer has had outstanding success in dealing with the problems of comfort.

The discomfort index shows no significant variation from make to make.

Solving or ameliorating the discomfort problems that many drivers associate with safety belts is a continuing challenge to all manufacturers.

Figure 36

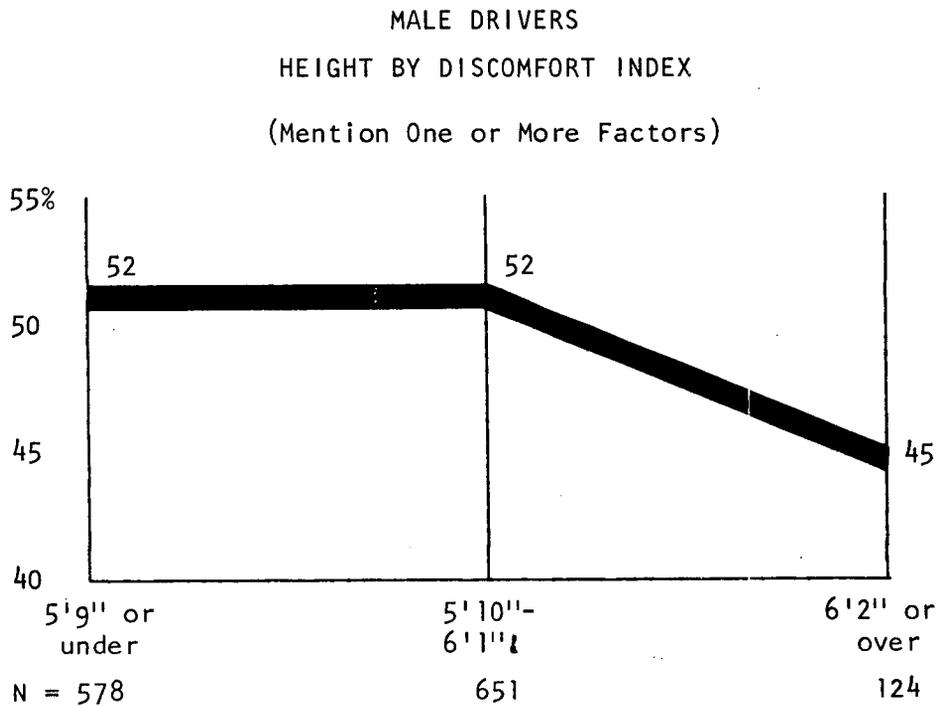


### Discomfort Index, by Anthropometric Measures

In an effort to show some of the ingredients of discomfort, as far as the driver is concerned, we present next a series of charts (three each for men and women) showing relationships between the discomfort index and weight, height, and waist size. For convenience, the charts show simply the percentage of drivers mentioning one or more of the five items on which the discomfort index is based.

Unfortunately, the numbers of cases available for analysis do not permit meaningful conclusions in all cases. Figure 37 (below) suggests that taller men (6'2" or over) have fewer problems of discomfort than shorter men, but statistical significance is lacking for firm conclusions.

Figure 37



Of the two related charts opposite, on weight and waist size, the former is not statistically significant, but the latter is. Figure 39 indicates an increase in discomfort, for men, as waist size increases from 33" or less to 36" or over.

Figure 38

MALE DRIVERS  
WEIGHT BY DISCOMFORT INDEX  
(Mention One or More Factors)

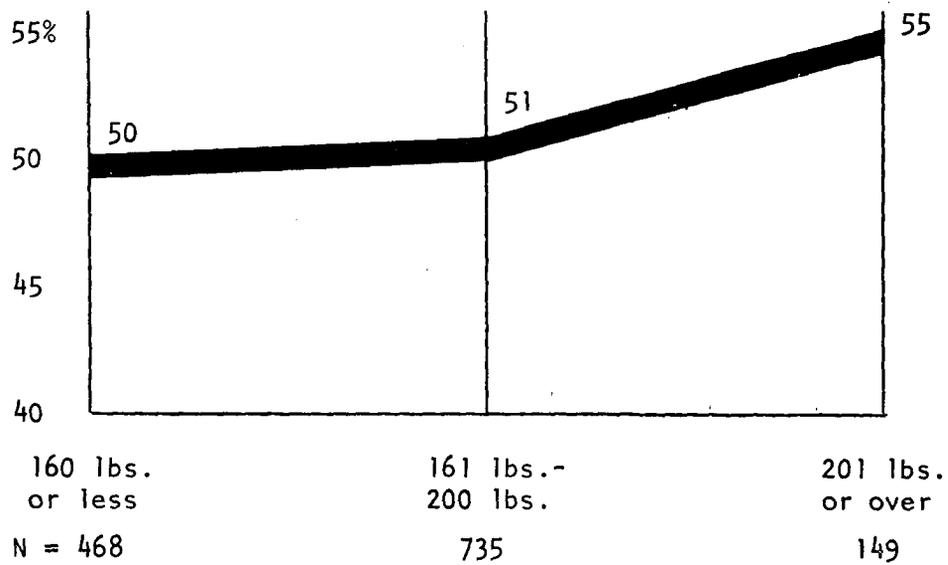
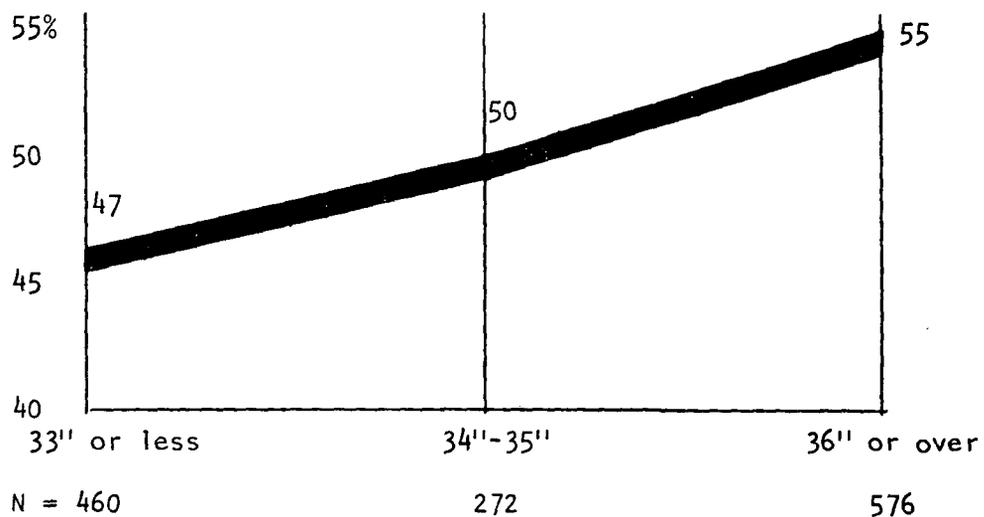


Figure 39

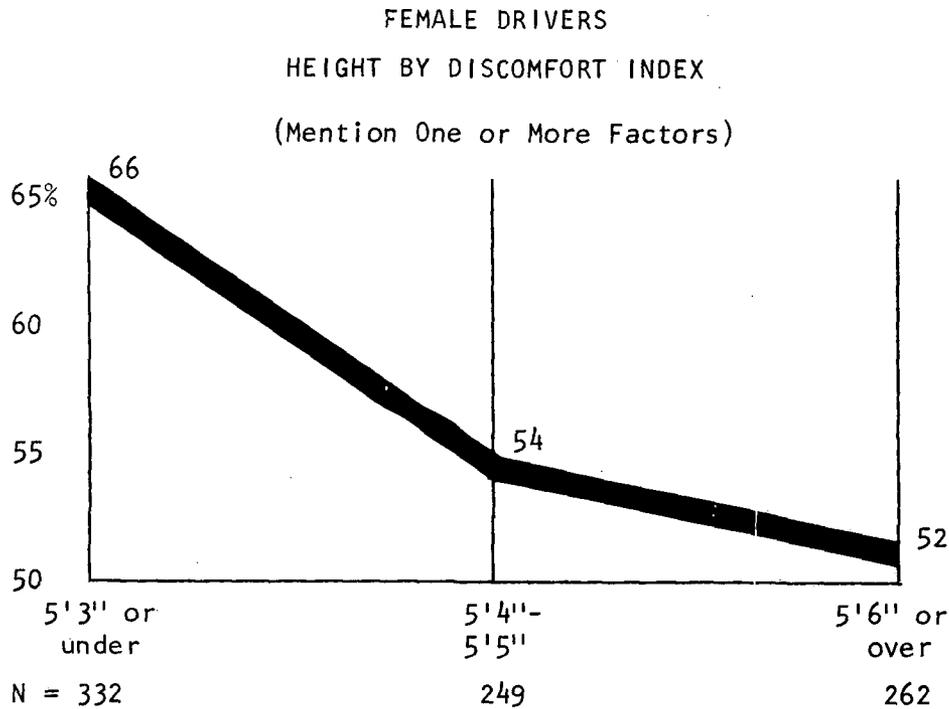
MALE DRIVERS  
WAIST SIZE BY DISCOMFORT INDEX  
(Mention One or More Factors)



With women, as with men, discomfort is less for taller people than for shorter.

Figure 40, below, shows a statistically significant drop in the discomfort index for women as height increases from 5'3" or under to 5'4"-5'5". Beyond the middle group on height, there is no further significant drop in the discomfort index.

Figure 40



Of the two related charts opposite, for women, only Figure 41 contains a relationship that is statistically significant. This shows that, as weight increases from the middle group (121-140 lbs.) to the upper group (141 lbs. or over), discomfort increases significantly.

Figure 41

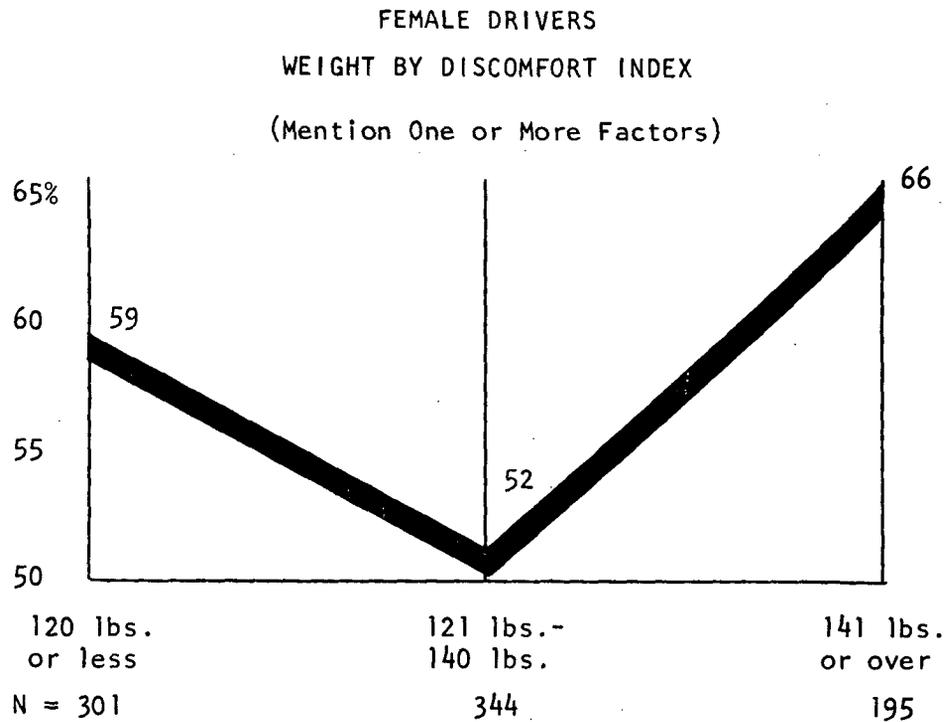
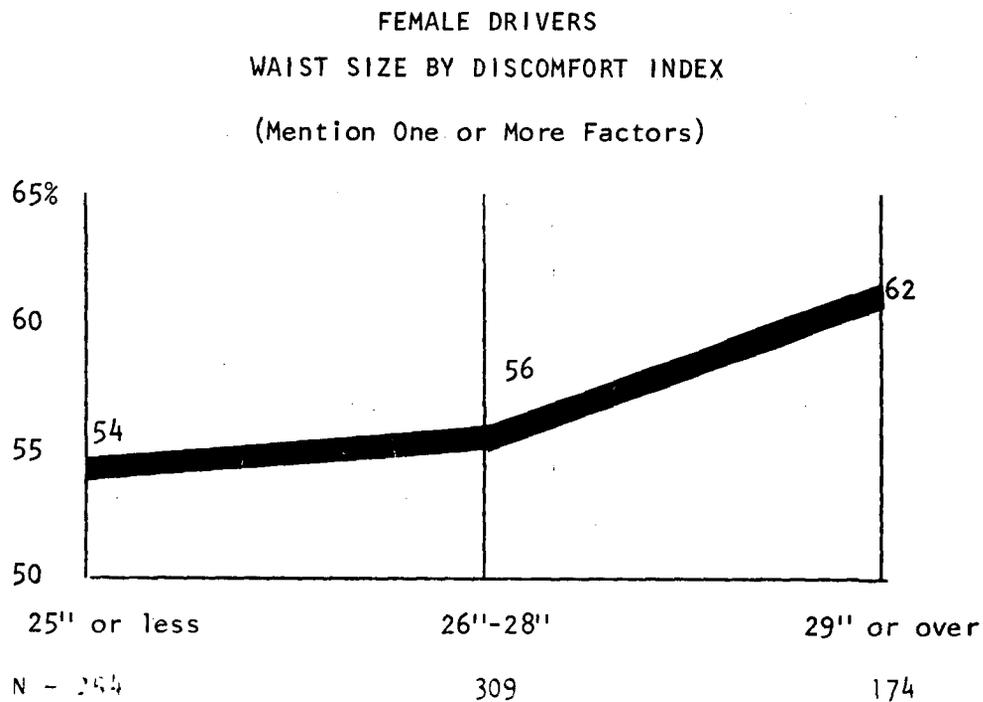


Figure 42



With more cases available, additional relationships between bodily measurements and perceived discomfort of the safety belt might be found, affording further clues to designers on how to improve the equipment.

Usage in 1974 Car, by Usage in Older Car Owned

Among people who own a pre-1974 car and report that they do not use the safety belt in that car, more than half (52%) report use of the safety belt in their 1974-model car.

Those who use the safety belt in a pre-1974 car, however, are more likely than those who do not to report usage of the safety belt in their 1974 car (88% vs. 52%).

We cannot distinguish cause from effect in this relationship, but the association suggests that habits of usage develop. Anything that promotes usage in the short run -- in the area of system design, driver education, or something else -- is likely to promote usage in the long run also.

Information on these points was obtained, after determining usage in the 1974 car, by asking:

"How does this compare with your use of a safety belt in a second or previously owned car -- one that is not a 1974 model ...?"

Of the 2,226 persons interviewed, 2,006 also own a pre-1974 car or previously owned one, and could be classified according to safety belt usage in that car and their 1974-model car, as follows:

Total available for analysis	<u>2,006</u>	<u>100%</u>	--
Nonusers in pre-1974 cars	<u>1,284</u>	64%	<u>100%</u>
Use in 1974 car	666	--	52%
Do not	618	--	48%
Users in pre-1974 cars	<u>722</u>	36%	<u>100%</u>
Use in 1974 car	632	--	88%
Do not	90	--	12%

(Note: Users in pre-1974 cars are those who say they wear/wore the safety belt almost always or more than half the time; nonusers are those who say less than half the time, almost never, or never. Users in 1974 cars are those in the "both on" or "lap only" groups; nonusers are those in the "both off" group.)

2. Rental Car Study -- U. S. Airports

### Methodology

The first phase of this research effort was a study conducted at three U. S. airports -- Miami, Chicago, and Los Angeles -- during the period December 11, 1973, to March 13, 1974.

A total of 44,724 observations of safety belt usage among drivers and right front seat passengers in 1974 rental cars were made during the study period. In addition, a total of 8,699 personal interviews were conducted with a subsample of rental car customers who were observed not to be wearing the safety belt correctly. Beginning and ending dates, and number of observations and interviews conducted at each of the three airports, are summarized below:

	<u>Miami</u>	<u>Chicago</u>	<u>Los Angeles</u>
Began	12/11/73	12/18/73	2/18/74
Ended	2/15/74	2/26/74	3/13/74
Observations	21,192	13,095	10,437
Interviews	3,833	3,206	1,660

### Selection of Airports

The three U. S. airports included in this phase of the research were selected after a number of airports were personally visited and inspected by representatives of the Department of Transportation and Opinion Research Corporation. Key elements in the final selection were: (1) a high volume of rental cars being returned on both weekdays and weekends; (2) a satisfactory physical layout of the rental car return area; (3) geographic location; and (4) the availability of an observation station where rental cars were moving slowly enough so that the front seat occupants could be observed for safety belt usage.

### Training

Field personnel selected for the rental car study received personal training from a research staff member of ORC. Throughout the study field personnel worked under the direction of a local supervisor who reported to the ORC Project Director. Procedures and materials for the observation and interviewing tasks were developed and pre-tested at the Miami airport prior to the start of the study. A representative of DOT participated in the pretest.

## Airport Operations

The physical layout and conditions at the three airports differed, and consequently the field procedures differed from one airport to another. The procedures established for each airport were as follows:

### Miami

Field personnel were distributed as follows:

#### Observer:

All rental cars were returned to the drop-off area via a single entrance point. One observer was stationed at this point.

#### Interviewers:

1 interviewer was stationed at the Hertz check-in area

1 interviewer was stationed at the Avis and National check-in area

#### Spotters (See below for description of function)

1 spotter was stationed at the Hertz check-in area

1 spotter was stationed at the Avis and National check-in area

The function of the observer was to record all the required information for each car being returned by a rental car customer. (See later section for list of items observed.) In cars where the shoulder harness was not being worn properly, the observer notified the interviewer via walkie-talkie or hand signal.

Interviewers attempted to obtain an interview with as many rental car customers as possible who were observed not to be wearing the shoulder harness properly. In slack periods, the interviewer received the signal to obtain an interview via walkie-talkie from the observer. When traffic was heavy, interviews were obtained with rental car customers who were observed by the interviewer not to be wearing the shoulder harness properly. The short distance between the observer and the interviewer at the Miami airport made it highly unlikely that rental car customers would slip off their safety belt before parking at the rental car check-in office.

The function of the spotters was to record the following information for all rental cars being returned: license number, agency, make of car, and model year. This information was highly accurate since it was obtained when the cars were being parked. Information obtained by the spotter was used to validate the model year and make for each car recorded on the observation forms. The information on the observation form and that on the spotter form was matched by computer in the ORC home office.

The observation/interviewing task at Miami was conducted seven days a week from 9:30 AM to 8:30 PM each day.

### O'Hare

Personnel were distributed as follows:

#### Observers:

2 observers were stationed in a truck parked on the entrance road which all returning rental cars used

#### Interviewers:

3 interviewers -- one stationed inside each of the agency offices

The weather conditions at O'Hare required all of the individuals to work indoors or otherwise protected from the elements. Since there was considerable distance between the entrance road and each of the agency offices, all communications between the observers and interviewers were by walkie-talkie.

The observer's work was verified by using a second observer. At the end of each day the work of the two observers was compared, and only those observations which agreed with respect to belt usage and model year of car were treated as valid. Consideration had been given to employing the spotter method, as at the other two airports, but weather conditions made this approach impractical at O'Hare.

Due to poor lighting at O'Hare, it was not possible to conduct the survey at night. Therefore, the schedule at O'Hare was 10:00 AM to 4:30 PM, seven days a week. With the coming of daylight saving time, this schedule was expanded by one hour per day.

Los Angeles

Personnel were distributed as follows:

Observers:

2 observers for Hertz and National (which have common entrance points -- see below)

1 observer for Avis

Interviewers:

3 interviewers -- one at each of the three agencies

The interviewer at Hertz was in contact with the observer by means of a walkie-talkie. Because of the close proximity of the Avis and National interviewers and their respective observers, these individuals communicated through hand signals.

Make and model year of cars observed were verified by employing a second person at the Hertz/National location whose work was used to verify that of the other observer. At the Avis location, with the relatively lower volume there and the close proximity of the entrance point and parking area, the observer was instructed to verify his or her own observations by physically inspecting each car.

During the first week of the operation, no work was conducted on Saturday or Sunday. As of Wednesday, December 18th, a schedule based on volume figures provided by the agencies was established which included Saturday and Sunday. The schedule was as follows:

Sunday	10 AM to 5 PM
Monday	2 PM to 7 PM
Tuesday	7 AM to 7 PM
Wednesday	7 AM to 7 PM
Thursday	7 AM to 7 PM
Friday	7 AM to 7 PM
Saturday	7 AM to 1 PM

### Data Collection -- Observation

At each airport, the observers recorded the following information for each rental car being returned to a rental agency:

- Date and time of day -- daylight, twilight, darkness
- Weather conditions -- dry, rainy, snow or ice
- Sex of driver and front seat passenger
- Shoulder harness on/off for both driver and passenger
- License number of car
- Rental car agency ownership
- Make/model of car (recorded from name plate on car)
- Model year (1974 models verified by spotter method or, at O'Hare, by a second observer)
- Type of seat -- bench or bucket

### Data Collection -- Interview

The personal interview with nonusers of the shoulder harness was conducted at the point where the customer was getting out of the car at or near the drop-off area. Specific questions or points covered in the interview were:

- Whether the lap belt was being worn
- How customer was able to start and drive the car without properly fastening the safety belt
- Reasons for not wearing the lap belt
- Reasons for not wearing shoulder harness properly
- Use of safety belt in customer's own car
- Background information (sex, age, weight, height, make of car and seat type)

A copy of the observation form and the questionnaire are contained in the Appendix.

Findings for Rental Cars  
At Miami, Chicago, and Los Angeles Airports

### Overall Usage, by Airport

As shown in Figure 43, the interlock and warning systems used in 1974 model cars are highly effective in increasing safety belt usage, compared with the level of usage noted in other studies for earlier model cars (as described in the Introduction).

Among drivers and right front seat passengers returning rental cars to three major U.S. airports, 82% were observed to have fastened the safety belt. About half of the drivers and passengers (54%) were wearing the shoulder harness properly (i.e., over the left shoulder of the driver/the right shoulder of the passenger).

At the Miami and Los Angeles airports, 77% and 79%, respectively, were observed to have fastened the safety belt. At the Chicago airport, as many as 89% of drivers and passengers were observed to have fastened the safety belt.

Proper use of the shoulder harness ranged from 45% of all drivers and passengers at the Miami airport to 61% at the Los Angeles airport and 62% at the Chicago airport.

Note: The percentages for "Both on" (shoulder harness and lap belt) are based on actual observations made as cars were being returned to the rental car agencies. Percentages for "Lap belt only" were extrapolated from the personal interviews with a subsample of nonusers. For example, the reported percentage of 32% lap-belt-only use at the Miami airport was determined as follows: 55% of drivers and passengers were observed not to be wearing the shoulder harness. A subsample of these nonusers were interviewed, and 58% reported that they had the lap belt on, but wore the shoulder harness improperly, i.e., under arm or behind back. Thus  $55\% \times 58\% = 32\%$ , the reported percentage for lap-belt-only use.

Figure 43

USE OF SAFETY BELTS IN 1974 RENTAL CARS,  
BY AIRPORT

(Drivers & Passengers)

	Both On <sup>1/</sup>	Lap Belt Only <sup>2/</sup>		<u>N</u>
Total	54%	28	82%	44,724
Miami	45%	32	77%	21,192
Chicago	62%	27	89%	13,095
Los Angeles	61%	18	79%	10,437

<sup>1/</sup> Shoulder harness and lap belt on.

<sup>2/</sup> Lap belt buckled, but shoulder harness under arm or behind back.

As Figure 44 shows, only minor differences are evident in the pattern of safety belt usage between drivers and passengers, and men and women.

#### Drivers vs. Passengers

Use of the safety belt was only slightly higher among drivers (82%) than among passengers (79%). A somewhat larger difference is evident with respect to proper use of the shoulder harness, where 55% of drivers compared to 47% of passengers were wearing the shoulder harness properly.

#### Sex of Driver

About equal proportions of male drivers (82%) and female drivers (83%) were wearing the safety belt. Proper use of the shoulder harness was at a little higher level among male drivers (55%) than among female drivers (51%).

#### Sex of Passenger

About equal proportions of male passengers (77%) and of female passengers (79%) were wearing the safety belt. Also, about equal proportions of male passengers (48%) and of female passengers (47%) were wearing the shoulder harness properly.

Figure 44

DRIVERS VS. PASSENGERS,  
 MEN VS. WOMEN  
 (3-Airport Total)

	Both On	Lap Belt Only		<u>N</u>
Drivers	55%	27	82%	37,016
Men	55%	27	82%	35,548
Women	51%	32	83%	1,468
Passengers	47%	32	79%	7,708
Men	48%	29	77%	3,103
Women	47%	32	79%	4,605

### Characteristics of Users and Nonusers

Relatively few differences are evident when rental car customers who wore the shoulder harness properly are compared with those who did not wear it properly.

Figure 45 presents findings from special studies conducted at the Miami and Los Angeles airports to compare the characteristics of users of the shoulder harness in 1974 rental cars with nonusers.

Differences between users and nonusers of a large enough magnitude to be statistically significant are evident on only four of the twenty items checked.

The user group contains a somewhat higher proportion of taller men (over 6 ft.) and a somewhat lower proportion of shorter men (5 ft. 8 in. or less) than does the nonuser group. (The number of women observed in this special study was too few for analysis.)

Users of the shoulder harness in 1974 rental cars were a little more likely than nonusers to be driving a 1974 car for the first time and to report that their own car was a pre-1972 model.

Note: The data reported opposite are for drivers only. In all subsequent sections reporting results from the survey at U.S. airports, the data are for drivers and passengers combined.

Figure 45

CHARACTERISTICS OF USERS VS. NONUSERS  
OF SHOULDER HARNESS

(Special Study: Drivers, Miami & Los Angeles)

	<u>Users</u> <sup>1/</sup>	<u>Nonusers</u> <sup>2/</sup>	<u>Difference</u>
N =	<u>417</u>	<u>247</u>	
Under 30 years	13%	8%	+ 5
30-39	29	30	- 1
40-49	30	34	- 4
50 and over	28	28	0
N =	<u>374</u>	<u>230</u>	
<u>Males</u>			
150 lbs. or less	8%	9%	- 1
151-170	30	35	- 5
171-199	42	35	+ 7
200 and over	20	21	- 1
N =	<u>374</u>	<u>230</u>	
<u>Males</u>			
5 ft. 8 in. or less	13%	23%	-10
5 ft. 9 in. to 6 ft.	61	59	+ 2
Over 6 ft.	26	18	+ 8
N =	<u>418</u>	<u>248</u>	
<u>Frequency of Use</u>			
<u>1974 Cars</u>			
31 days or over	30%	37%	- 7
21-30	6	4	+ 2
10-20	19	22	- 3
2-9	34	32	+ 2
None before today	11	5	+ 6
N =	<u>413</u>	<u>244</u>	
<u>Own Car</u>			
1974	14%	21%	- 7
1973	27	32	- 5
1972	23	20	+ 3
Other	36	27	+ 9

<sup>1/</sup> Persons wearing the shoulder harness and lap belt correctly -- "Both on," in the terminology of the preceding figures.

<sup>2/</sup> Persons with both the shoulder harness and lap belt off.

Circumvention/Defeat of the Interlock System

One objective of the follow-up interview was to determine how rental car customers were able to start and drive the car without properly fastening the safety belt. The methods used or reasons given are presented in Figure 46.

The most frequent situation was that the lap belt was buckled, but that the shoulder harness was worn under the arm or behind the back. About one in five (19%) reported that the interlock system was not working when he got the car. Sixteen percent circumvented the interlock system, mainly by buckling the belt behind their back. Only 1% reported that they had defeated the system by disconnecting the wires.

Figure 46

METHODS USED TO START AND DRIVE CAR  
WITHOUT PROPERLY FASTENING THE SAFETY BELT

(3-Airport Total)

Total interviewed in follow-up:	N = <u>8,699</u>
Shoulder belt worn under arm/behind back	61%
Interlock system not working when car received	19
Circumvention:	<u>16</u>
Buckled belt behind back	9
Hooked belt on door (handle, arm rest)	2
Sat on belt or tucked it in seat	2
Connected passenger belt to driver's buckle	1
Started engine without sitting on seat:	
drove with buzzer <u>on</u>	1
Started engine without <u>sitting</u> on seat:	
drove with buzzer <u>off</u>	1
Defeat:	
Disconnected the wires	1
Other	3

Reasons for Circumvention/Defeat

The main reasons given by rental car customers for circumventing or defeating the interlock system were related to discomfort of the belts (37%), a general dislike for belts (23%), a feeling of being trapped, confined, or restricted (18%), and opposed on principle -- want freedom of choice (15%), as shown in Figure 47.

Figure 47

REASONS FOR CIRCUMVENTION OR DEFEAT

(3-Airport Total)

Those who circumvented or defeated system:	N = <u>1,768</u>
Causes physical discomfort	37%
Generally negative attitude -- don't like it	23
Feeling of being trapped, confined, restricted	18
Opposed on principle	15
Short length of trip -- belt not needed	14
Difficult to operate	7
Wrinkles clothing	5
Confusing to operate	2
Other	14

(Percentages add to 135%  
because of multiple mentions.)

Reasons for Not Wearing Shoulder Harness Properly

The most frequent reason, by far, offered by rental car customers who had fastened the safety belt but were observed not to be wearing the shoulder harness properly (i.e., over their shoulder) related to physical discomfort. This reason was given by approximately half of the group (47%). The other reasons given are shown in Figure 48.

Figure 48

REASONS FOR NOT WEARING  
SHOULDER HARNESS PROPERLY

(3-Airport Total)

Those who were not wearing shoulder harness properly: N = 5,251

Causes physical discomfort	47%
Feeling of being trapped, confined, restricted	17
Generally negative attitude -- don't like it	15
Opposed on principle	10
Don't understand how to wear it: thought this was the right way	9
Short length of trip -- not needed	7
Wrinkles clothing	6
Difficult to operate	5
Confusing to operate	3
Wouldn't hold me back	3
Wouldn't stay on shoulder	3
Other	14

(Percentages add to 139%  
because of multiple mentions.)

Usage, by Weight Class/Seat Type of Car

Figure 49 shows safety belt usage in rental cars by five weight classifications. Proper use of the shoulder harness is at a somewhat higher level in subcompacts and compacts than in the heavier models.

Figure 49

SAFETY BELT USAGE BY WEIGHT CLASS  
(3-Airport Total)

	Both On	Lap Belt Only		<u>N</u>
Subcompact	61%	23	84%	2,965
Compact	60%	24	84%	8,345
Intermediate	54%	29	83%	23,450
Standard	46%	29	75%	7,953
Luxury	39%	35	74%	377

The type of seat also appears to be a factor in safety belt use, particularly with respect to correct use of the shoulder harness. As shown in Figure 50, customers in rental cars with bucket seats were more likely to wear the shoulder harness (60%) than were those who rented cars with bench seats (48%).

It should be noted that bucket seats tend to go with the lower weight classes, and both of these groups show higher safety belt usage than their counterparts.

Figure 50

SAFETY BELT USAGE BY SEAT TYPE  
(3-Airport Total)

	Both On	Lap Belt Only		<u>N</u>
Bench	48%	31	79%	14,098
Bucket	60%	26	86%	8,685

Usage, by Manufacturer

The percentage of rental car customers who were observed to have fastened the safety belt was virtually the same for three of the four manufacturers -- AMC (85%), GM (85%), and Ford (82%). Chrysler shows the least usage (65%). In Figure 51, below, the figures represent the percentage of rental car customers having some degree of protection, by manufacturer.

Figure 51

USAGE BY MANUFACTURER --  
BOTH ON, PLUS LAP BELT ONLY  
(3-Airport Total)

		<u>N</u>
AMC	85%	5,498
GM	85%	20,521
Ford	82%	11,240
Chrysler	65%	7,018

As shown in Figure 52, correct use of the safety belt (full protection) ranged from 60% of the customers who rented a Ford to 42% of those who rented a Chrysler. All percentage differences are statistically significant.

Figure 52

USAGE BY MANUFACTURER -- BOTH ON  
(3-Airport Total)

		<u>N</u>
Ford	60%	11,240
AMC	58%	5,498
GM	53%	20,521
Chrysler	42%	7,018

Interlock Status, by Manufacturer

The relatively high percentage of inoperative interlock systems in Chrysler cars (20% vs. 8%-6% for GM, AMC, and Ford), along with the higher percentage of customers who indicated they had circumvented or defeated the interlock system (13% for Chrysler vs. 9%-7% for Ford, AMC, and GM), are major factors in the low usage reported for customers who rented Chryslers. (Figures 53 and 54.)

Figure 53

INTERLOCK SYSTEM NOT WORKING,  
BY MANUFACTURER  
(3-Airport Total)

		<u>N</u>
Chrysler	20%	493
GM	8%	713
AMC	7%	142
Ford	6%	296

Figure 54

INTERLOCK CIRCUMVENTION/DEFEAT,  
BY MANUFACTURER  
(3-Airport Total)

		<u>N</u>
Chrysler	13%	319
Ford	9%	426
AMC	7%	142
GM	7%	624

### Usage, by Model of Car

Figure 55 shows the percentage of front seat occupants who were observed to be properly wearing the combination lap and shoulder belts in each of 35 different 1974 model rental cars. Usage scores range from a high of 69% for Comet to a low of 27% for Cadillac.

Ten models scored in the 60%-69% range in terms of safety belt usage. Among this group, 7 are Ford Motor cars, 2 are GM cars, and 1 an AMC car.

Among the fifteen models with usage scores in the 50%-59% range, GM has 8 models, AMC has 4 models, Ford has 2 models, and Chrysler has 1 model.

Ten models had use scores under 50% -- 5 Chrysler models, 4 GM models, and 1 Ford model.

Figure 55

## USAGE BY MODEL NAME -- BOTH ON

(3-Airport Total)

		<u>N</u>
Comet (F)	69%	812
Pinto (F)	67%	1,504
Monterey (F)	67%	347
Mustang (F)	66%	1,068
Maverick (F)	65%	797
Cougar (F)	64%	568
Montego (F)	63%	1,413
Javelin (AMC)	62%	1,092
Camaro (GM)	61%	414
Firebird (GM)	60%	775
Hornet (AMC)	59%	180
Cutlass (GM)	58%	3,459
Matador (AMC)	58%	2,370
Nova (GM)	57%	1,062
Ambassador (AMC)	57%	1,196
Marquis (F)	57%	252
Torino (F)	56%	2,490
Gremlin (AMC)	55%	660
Vega (GM)	55%	801
Monte Carlo (GM)	54%	2,520
Century (GM)	53%	1,941
Chevelle (GM)	53%	1,606
Le Mans (GM)	52%	3,714
Grand Prix (GM)	51%	452
Dart (C)	50%	562
Valiant (C)	49%	671
Catalina (GM)	48%	642
Charger (C)	47%	1,230
LTD (F)	45%	1,075
Impala (GM)	44%	1,464
Caprice (GM)	42%	695
Satellite (C)	40%	2,325
Fury (C)	39%	1,059
Monaco (C)	34%	837
Cadillac (GM)	27%	150

3. Rental Car Study --

Toronto International Airport

### Methodology

The second phase of the research effort reported here was a study conducted in Canada among drivers and front seat passengers of rental cars being returned to the Toronto International Airport. This study was similar to the rental car studies at the three U.S. airports, but presented the unique opportunity of studying safety belt usage under systems somewhat different from the interlock system in 1974 model cars in the United States. Specifically, the rental cars at the Toronto airport, like those available at U.S. airports, had a one-piece retractable shoulder harness and lap belt, but had different types of use-inducing systems, depending on the make of the car. The three types of systems were:

Sequential logic system with interlock and warning light and buzzer (American Motors)

Sequential logic system with warning light and buzzer but no interlock (Ford and Chrysler)

Warning light and buzzer with no sequential logic system or interlock (General Motors)

The Toronto study was conducted in two stages during the period January 25, 1974, to April 18, 1974. Overall, a total of 8,589 observations of safety belt usage among drivers and outboard front passengers in returning rental cars were made during the study period. In addition, a total of 3,095 personal interviews were conducted with subsamples of rental car customers. Of the total interviews, 585 were with customers who were observed to be wearing the shoulder harness correctly, and 2,510 were with customers who were observed not to be wearing the shoulder harness correctly.

The first stage of the Toronto study was completed on March 15. Results for this stage were tabulated through March 8, and the findings from 3,899 observations and 1,278 interviews with drivers and front seat passengers observed not to be wearing the safety belt were reported to DOT in Washington, D.C., on April 2-3. This stage of the Toronto study revealed a relatively low number of rental cars that had operating safety belt systems. Thus, safety belt usage data for the three use-inducing systems were more likely to be influenced by the condition of the belt system when the customers received their rental car than by their own predisposition to use or not to use the safety belt.

The survey bears out the expectation that the interlock produces the highest usage rate of the three systems observed. Rather surprisingly, however, the system with sequential logic but no interlock and the system with warning light and buzzer only appear equally effective in inducing motorists to wear both the shoulder harness and lap belt. (See caution, however.)

It should be noted that a large proportion of rental cars at Toronto were not in operating condition as far as the use-inducing system was concerned. This was indicated by early findings that overall usage at Toronto was substantially less than at the three U.S. airports.

Accordingly, a system of inspection was instituted as returning customers brought their cars to the drop-off areas. This revealed that twice as many cars had nonworking as had working use-inducing systems.

The comparison of usage rates by use-inducing system was based on cars in which the use-inducing system was supposedly in working order. However, it is quite likely that some of the cars with working systems at the time of inspection had become cars with nonworking systems (circumvented or defeated) by the time they were delivered to the next customer, who was the one observed in the study.

The second stage of the Toronto study, which began on March 21 and ended on April 18, incorporated several new procedures and changes in the field operation in order to bring about an increase in the number of rental cars with a belt system that was operational and thus provide more meaningful data than those obtained in the first stage. Specific changes made in the field operation for the second stage were as follows:

Observation and interviewer coverage was expanded to include rental car return facilities at both the Toronto terminals.

Procedures were instituted to inspect and test the seat belt system in as many returning 1974 rental cars as possible. The procedures were designed to determine whether or not the system was in operating order. In cars in which the system was found to be inoperative, an attempt was made to restore the system to working order. The license number of each car inspected was recorded so that, through a computer match with the observations, the usage rate could be analyzed for cars with operational systems as well as for all cars. (Detailed procedures for inspecting safety belt systems will be found in the Appendix.)

A special project was initiated to permit comparison of belt usage between the sequential-warning and warning-only systems when make of car and design of shoulder harness were held constant. This project called for converting warning-only systems in 30 General Motors cars to sequential-warning systems, and sequential-warning systems in 25 Ford cars to warning-only systems. Special devices were provided by General Motors Corporation and the Ford Motor Company to effect this conversion.

A total of 4,690 observations of safety belt usage among drivers and front seat passengers in returning rental cars were made during the second stage. In addition, a total of 1,857 personal interviews (585 with users and 1,272 with nonusers) were conducted. Of the 4,690 observations, 2,495 were with customers who had rented a car that was inspected and identified as having a working or nonworking belt system and a sequential logic or nonsequential logic belt system. The numbers of observations and interviews obtained by working and nonworking systems are summarized below:

Observations	4,690
Working systems	1,052
Nonworking systems	2,120
Unable to inspect system or inspection inconclusive <sup>1/</sup>	1,518
Interviews	1,857
Users	<u>585</u>
Working systems	143
Nonworking systems	105
Unable to inspect system or inspection inconclusive <sup>1/</sup>	337
Nonusers	<u>1,272</u>
Working systems	115
Nonworking systems	527
Unable to inspect system or inspection inconclusive <sup>1/</sup>	630

### Training

As in the study at U.S. airports, field personnel selected for the Toronto study received personal training from a research staff member of ORC. The training session covered the observation, interviewing and spotter (validation) tasks and, in the case of the second stage study, the detailed procedures to be followed when inspecting seat belt systems in rental cars that had been returned to the airport. Throughout the study, field personnel worked under the direction of a local supervisor who reported to the ORC Project Director. Procedures and materials for the Toronto study were developed in Princeton and reproduced by the local supervisor in Toronto.

<sup>1/</sup> Because of the high volume of rental cars being returned at a given time, it was not possible to inspect the belt system in all cars in which the front seat occupants were observed. The footnoted figures also include certain cases in which the inspectors were unable to determine whether or not the seat belt systems were operational.

## Airport Operations

The Toronto airport has two separate rental car facilities -- one at the domestic (Canadian) terminal and one at the international terminal. The first stage of the study was conducted exclusively at the international terminal after it was determined that this terminal had the highest volume of returning rental cars and the best physical layout for the observing and interviewing tasks. The second stage study was performed at both the domestic and international terminals.

### First Stage Study

Field personnel were distributed as follows:

#### Observer:

1 observer was stationed at the entrance to the rental car return area. The observer was positioned well away from the drop-off area to minimize the possibility that occupants would unfasten their safety belt in anticipation of getting out of the car.

#### Interviewers:

2 interviewers were stationed in the parking area where customers depart from the cars. The interviewers were in contact with the observer by means of a walkie-talkie.

#### Spotter:

1 spotter was stationed in the parking area in order to validate the model year and make of car for each car recorded on the observation forms. Information recorded by the spotter included: license number, rental agency, make of car, model year, and seat type.

The functions of the observers and interviewers were basically the same as the functions of the field personnel at U.S. airports, which are described in the preceding section of this report.

The observation and interviewing tasks during stage 1 were conducted Monday through Friday, from approximately 9:00 AM to 7:00 PM each day. The tasks were not performed on Saturday or Sunday because of the relatively small number of rental cars being returned during those two days.

### Second Stage Study

The observation, interview, and inspection tasks were performed at both the domestic terminal and the international terminal. Four field personnel were assigned to each terminal -- one person to observe, one to conduct interviews, and two to spot and collect vehicle data and inspect seat belt systems.

As in the first stage, the observer at each terminal was stationed at a considerable distance from the car-return area to minimize the possibility that customers would unfasten the safety belt in anticipation of getting out of the car. The interviewer and those responsible for collecting vehicle data and inspecting seat belts were stationed in the car-return area. Interviewers were in constant contact with the observers by means of walkie-talkies to enable observers to alert the interviewers to the return of nonusers and users. Those responsible for vehicle data and seat belt inspection operated independently of the observer and interviewer.

The tasks performed during stage 2 were conducted Monday through Saturday, from approximately 10:00 AM to 6:30 PM each day.

### Data Collection -- Observation

At each terminal, the observers recorded the following information for rental cars being returned to a rental agency:

- Date and time of day -- daylight, twilight, darkness
- Weather conditions -- dry, rainy, snow or ice
- Sex of driver and front seat passenger
- Shoulder harness on/off for both driver and passenger
- License number of car
- Rental car agency -- Avis, Hertz, Tilden, and Budget
- Make of car and model year
- Type of seat -- bench or bucket

Data Collection -- Interview with Nonusers of Safety Belt

Specific questions or points covered in the interview were:

- Whether the lap belt was being worn
- How customer was able to start and drive the car without properly fastening the safety belt
- Reasons for not wearing the safety belt
- Reasons for not wearing the shoulder harness properly
- Use of safety belt in customer's own car
- Background information (sex, age, weight, height, make of car, seat type, number of doors)

Data Collection -- Interview with Users of Safety Belt

Specific questions or points covered in the interview were:

- Reasons for wearing the safety belt
- Frequency of wearing safety belt in own car
- Previous experience with driving a 1974 model year car
- Background information (sex, age, weight, height, make of car, seat type, number of doors)

Data Collection -- Inspection of Safety Belt Systems

The inspection of safety belt systems in returned rental cars included four basic steps:

- 1 A visual inspection to determine whether the driver's safety belt was buckled or unbuckled
- 2 A sequential logic test with the safety belt buckled
- 3 A sequential logic test with the safety belt unbuckled if neither light nor buzzer were activated in step 2
- 4 A physical check of the plug under the front seat

Copies of the observation form, questionnaire, inspection form, and procedures are contained in the Appendix.

Findings for Rental Cars  
at Toronto

### Overall Usage, Toronto vs. U.S. Airports

As shown in Figure 56, among drivers and front seat passengers returning 1974 rental cars to the Toronto airport, 44% were observed to have fastened the safety belt, with 38% wearing the shoulder harness properly (i.e., over the left shoulder of the driver/the right shoulder of the passenger).

By comparison, 82% of drivers and passengers returning rental cars to the three U.S. airports were observed to have fastened the safety belt, with over half (54%) observed to be wearing the shoulder harness properly.

The relatively low incidence of safety belt usage found at the Toronto airport is accounted for, in large measure, by the high proportion of rental cars which, when inspected, were found to have inoperative belt systems. As shown in Figure 57, a special tabulation of 2,468 observations of returning rental cars which had been inspected by field personnel shows that two-thirds (68%) had inoperative safety belt systems, while only one-third had systems in working order.

The incidence of inoperative belt systems in rental cars at a U.S. airport was much lower than that for the Toronto airport. In March, 1974, the safety belt systems in 185 1974 model Hertz cars at the Los Angeles airport were inspected by ORC field personnel. The purpose of this inspection was to provide a comparison with inspection results being obtained at Toronto.

As shown in Figure 57, the interlock and sequential warning systems were found to be in working order in 70% of the rental cars at the Los Angeles airport.

Note: As in the U.S. airport studies, the percentages for "Both On" (shoulder harness and lap belt) are based on actual observations made as cars were being returned to the rental car agencies. Percentages for "Lap Belt Only" were extrapolated from the personal interviews with a subsample of nonusers.

Figure 56

USE OF SAFETY BELTS  
IN 1974 RENTAL CARS

(Drivers & Passengers at Toronto)

	Both On	Lap Belt Only	Neither	<u>N</u>
Total Canada	38%	6 44%	56%	4,690
Total U.S.	54%	28	82% 18%	44,724

Figure 57

INSPECTION OF SAFETY BELT SYSTEMS

(Drivers Only)

	Working	Not Working	<u>N</u>
Total Canada	32%	68	2,468
Special U.S. Test	70%	30	185

Usage, by Working and Nonworking Systems

As might be expected, there is a marked increase in seat belt usage when rental car customers are provided with a car in which the safety belt system has not been circumvented or defeated prior to receiving the car.

Usage, measured in terms of either full protection (both on) or some protection (both on, or lap belt only), is over two and one half times greater in cars with working systems than in cars with nonworking systems. (Figure 58.)

Since a high proportion of the rental cars at the Toronto airport had inoperative belt systems, and since those systems had a negative effect on usage, the findings that follow are based on observational and interview data for working systems only. Working systems were identified by inspecting cars shortly after the customer got out of the car at the drop-off area.

Figure 58

USAGE BY SYSTEMS WORKING/NOT WORKING

(Drivers & Passengers at Toronto)

	Both On	Lap Belt Only	Neither	N	
Working Systems	63%	17	80%	20%	1,025
Non-working Systems	27%	4	31%	69%	2,120

Usage, by Type of Inducement System

One of the primary objectives of the Toronto study was to measure seat belt usage in cars with a one-piece combination shoulder harness and lap belt, but with different use-inducement systems.

As Figure 59 shows, overall usage, for drivers and passengers combined, ranged from 84% in Canadian rental cars with an interlock system to 74% in cars with a sequential logic system, but no interlock. Results for the interlock system must be viewed with extreme caution because of the small number of observations (24) on which the findings are based. The superiority of the interlock system in increasing belt usage, however, has been documented in other research, particularly the general population study now being conducted in 19 U.S. cities.

The data also indicate that the Canadian rental cars with a nonsequential logic system (light and buzzer only) had as high a use rate in terms of full protection (both on) as cars with a sequential logic system.

In terms of full protection, the interlock system scores 67% at the Toronto airport and 54% at the U.S. airports. Again it should be recalled that only 24 cases of cars with interlock systems were available for analysis in Toronto, so the apparent difference is not statistically significant.

Figure 59

USAGE BY TYPE OF INDUCEMENT SYSTEM  
(Drivers & Passengers at Toronto)

TORONTO:	Both On	Lap Belt Only		Neither	N
Interlock	67%	17	84%	16%	24
Sequential	64%	10	74%	26%	183
Light and Buzzer Only	62%	21	83%	17%	842
TOTAL U.S.					
Interlock Only	54%	28	82%	18%	44,724

Nonworking Belt Systems, by Manufacturer

The inspection study carried on at the Toronto airport shows differences in the proportion of nonworking belt systems by manufacturer.

As shown in Figure 60, the observation and inspection data indicate that Chrysler had the highest proportion of cars in which the seat belt system was either circumvented or defeated (84%), and General Motors had the lowest (53%).

Figure 60

NONWORKING SEAT BELT SYSTEMS

(Toronto)

	Nonworking Systems	N
AMC	75%	88
Chrysler	84%	891
Ford	70%	385
GM	53%	1,104

Method of Circumventing/Defeating System

Figure 61 shows how the belt systems were circumvented or defeated according to manufacturer.

In American Motors cars the most common method of defeating the systems was to disconnect the plug under the front seat. In Chrysler and Ford cars, defeat of the systems was mainly accomplished by either disconnecting the light and/or buzzer or pulling the plug. In General Motors cars, the most common practice was simply to buckle the seat belt.

These data also come from the inspection study.

Figure 61

NONWORKING SYSTEMS  
METHOD OF CIRCUMVENTING/DEFEATING SYSTEM

(Toronto)

	<u>AMC</u>	<u>Chrysler</u>	<u>Ford</u>	<u>GM</u>
Plug disconnected	65%	25%	30%	16%
Light and/or buzzer disconnected	18	50	42	19
Wires cut	5	3	11	4
Belt buckled	3	6	5	48
Other	9	16	12	13
	N = 88	891	385	1,104

### Usage, by Type of System and Manufacturer

As previously reported, usage of seat belt varied very little between rental cars with a sequential logic system and those with a non-sequential logic system. This finding is also evident when the usage data are analyzed by type of system and manufacturer.

As Figure 62 shows, Chrysler cars with a sequential logic system have a usage rate of 67%, while Chrysler cars with a nonsequential logic system have a usage rate of 64%. The comparable figures for Ford are 66% and 62%, and for General Motors, 58% and 63%. None of the differences, however, are statistically significant.

Note: The inspection study carried on in conjunction with the observation study at the Toronto airport shows that a number of the Ford and Chrysler cars that were believed to have only a sequential logic system actually had a nonsequential system.

Likewise, some of the General Motors cars that were believed to have only a nonsequential logic system were found to have a sequential logic system when inspected.

Included in the findings opposite are a few General Motors cars that were purposely converted from a nonsequential to a sequential system and a few Ford cars that were converted from a sequential to a nonsequential system.

Figure 62

USAGE IN 1974 CARS  
 SEQUENTIAL LOGIC VS. NONSEQUENTIAL LOGIC  
 (Working Systems, Drivers & Passengers at Toronto)

		Both Shoulder and Lap Belt On	<u>N</u>
American Motors	(Too few cases for analysis)		
Chrysler			
	Sequential	67%	21
	Nonsequential	64%	167
Ford			
	Sequential	66%	65
	Nonsequential	62%	82
General Motors			
	Sequential	58%	83
	Nonsequential	63%	583

Circumvention/Defeat of the Working Systems

Figure 63 shows the various ways that front seat occupants who were not wearing the safety belt or not wearing it properly were able to drive the car without having the buzzer and warning light go on. The findings reported are for cars with working belt systems only.

The question asked in the follow-up interview was as follows:

"We notice that the safety belt in this car was not put on properly. In the 1974 cars the safety belt must be worn in order to avoid having the buzzer and warning light on. What did you do with the safety belt to enable you to drive this car without the buzzer and warning light on?"

About equal proportions (47% and 51%) report that: (1) they had the lap belt buckled but wore the shoulder harness under the arm or behind the back, or (2) they circumvented the system (mainly by buckling the belt behind their back). Only 2% report that they defeated the system by disconnecting the wires.

Figure 63

METHODS USED TO START AND DRIVE CAR  
WITHOUT PROPERLY FASTENING THE SAFETY BELT

(Working Systems, Drivers & Passengers at Toronto)

Total interviewed in follow-up	N = <u>83</u>
Shoulder belt worn under arm/behind back	47%
Circumvention:	<u>51</u>
Buckled belt behind back	29
Hooked belt on door (handle, arm rest)	5
Sat on belt or tucked it in seat	5
Drove with buzzer <u>on</u>	12
Defeat:	
Disconnected the wires	2

Reasons for Circumvention/Defeat

The main reasons given by rental car customers for circumventing or defeating the belt system are a general dislike for belts (27%), discomfort of the belts (20%), the short length of trip taken (20%), and a feeling of being trapped, confined, or restricted (13%).

The reasons offered closely parallel those given by rental car customers in the U.S. airport study in both subject matter and frequency of mentions.

Figure 64

REASONS FOR CIRCUMVENTION OR DEFEAT

(Working Systems, Drivers & Passengers at Toronto)

Those who circumvented or defeated system:	N = <u>45</u>
Generally negative attitude -- don't like it	27%
Causes physical discomfort	20
Short length of trip -- belt not needed	20
Feeling of being trapped, confined, restricted	13
Opposed on principle	4
Difficult to operate	4
Wrinkles clothing	2
Other	18

(Percentages add to 108%  
because of multiple answers.)

Reasons for Not Wearing Shoulder Harness Properly

The most frequent reason, by far, offered by rental car customers who had fastened the safety belt but were observed not to be wearing the shoulder harness properly (i.e., over their shoulder), related to physical discomfort. This was also the reason given most frequently by customers interviewed at U.S. airports.

Figure 65

REASONS FOR NOT WEARING  
SHOULDER HARNESS PROPERLY

(Working Systems, Drivers & Passengers at Toronto)

Those who were not wearing shoulder harness properly:	N = <u>40</u>
Causes physical discomfort	45%
Generally negative attitude -- don't like it	13
Feeling of being trapped, confined, restricted	8
Wouldn't stay on shoulder	5
Don't understand how to wear it: thought this was right way	3
Short length of trip -- not needed	3
Wrinkles clothing	3
Wouldn't hold me back	3
Other	18

(Percentages add to 101%  
because of multiple answers.)

Characteristics of Users and Nonusers

Figure 66 compares the characteristics of rental car customers who wore the one-piece shoulder and lap belt correctly (users) with those who did not (nonusers).

Use of the safety belt in rental cars correlates highly with use of the safety belt in one's own car. Among users, 70% report that they almost always use safety belts in their own car, while only 36% of nonusers say this. Other differences are not statistically significant.

Figure 66

USERS VS. NONUSERS OF SHOULDER HARNESS  
(Working Systems, Drivers Only at Toronto)

	<u>Users</u>	<u>Nonusers</u>	<u>Points Difference</u>
Age:			
Under 30	15%	18%	- 3
30-39	38	32	+ 6
40-49	22	27	- 5
50 or over	24	20	+ 4
Citizenship:			
American	50%	44%	+ 6
Canadian	41	53	-12
Other	8	1	+ 7
Use of seat belts in own car:			
Always	70%	36%	+34
More than half the time	8	10	- 2
Less than half the time	5	7	- 2
Almost never	6	12	- 6
Never	9	33	-24
Model year of own car:			
1974	16%	20%	- 4
1973	19	31	-12
1972	23	15	+ 8
Pre-1972	39	32	+ 7
Have driven a 1974 car:			
31 days or more	37%	37%	0
16-30 days	10	8	+ 2
2-15 days	39	42	- 3
Never before	12	11	+ 1
	N = 143	85	

(\*Not reported" omitted)

## APPENDIX

- Observation Forms
- Inspection Forms
- Questionnaires
- Statistical Supplements

Verified vs. Unverified Observations

Sampling Tolerances

Following is a brief description of the items contained in this Appendix:

<u>GENERAL POPULATION STUDY</u>	<u>Page</u>
Observation form used in the 19-city study	A-1
Questionnaire used for follow-up telephone interviews with drivers of 1974 model cars from observation study	A-2
 <u>U.S. AIRPORT STUDY</u>	
Observation form used at the three U.S. airports	A-9
Questionnaire used for follow-up interviews with drivers and passengers who were observed not to be wearing the shoulder harness	A-10
Questionnaire for special study at Miami and Los Angeles airports among users and nonusers of shoulder harness (drivers only)	A-12
 <u>TORONTO AIRPORT STUDY</u>	
Observation form used at the Toronto airport	A-13
Questionnaire used for follow-up interviews with drivers and passengers in American Motors cars who were observed not to be wearing the shoulder harness	A-14
Questionnaire used for follow-up interviews with drivers and passengers in Ford, Chrysler, and General Motors cars who were observed not to be wearing the shoulder harness	A-16
Questionnaire used for follow-up interviews with drivers of 1974 cars who were observed to be wearing the shoulder harness	A-18
Safety belt inspection form	A-19
Procedure for inspecting seat belt systems	A-20
 <u>STATISTICAL SUPPLEMENTS</u>	
Verified vs. Unverified Observations	A-21
Sampling Tolerances	A-22



51183  
052474

DRIVER QUESTIONNAIRE

OMB No. 04S73034  
Expires Dec. 31, 1975

TIME STARTED \_\_\_\_\_

(Telephone Interview)

Assignment Number

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Introduction

"Hello, my name is \_\_\_\_\_ from Opinion Research Corporation, Princeton, New Jersey. We're conducting a survey among owners and drivers of 1974 model cars regarding their use of and attitudes toward the Safety Belt Interlock System. We are interviewing both men and women. In your household I'd like to talk with a (Male) (Female) driver of a 1974 car."

IF NO (MALE) (FEMALE) DRIVER OF A 1974 MODEL CAR IN HOUSEHOLD, DISCONTINUE INTERVIEW.

IF DESIGNATED RESPONDENT NOT HOME, FIND OUT WHEN HE/SHE IS EXPECTED IN AND CALL BACK AT THAT TIME.

AFTER CONTACT HAS BEEN MADE WITH DESIGNATED RESPONDENT, SAY:

"We're conducting a survey among drivers of 1974 model cars regarding the new Safety Belt Interlock System. We would appreciate your cooperation on this survey. May we take a little time and go through the questions?"

- |   | <u>1973</u>  | <u>1974</u>  |
|---|--|--|
| 1. During what month did you first begin to drive the 1974 model car?   | 1 SEPTEMBER<br>2 OCTOBER<br>3 NOVEMBER<br>4 DECEMBER   | 1 JANUARY<br>2 FEBRUARY<br>3 MARCH<br>4 APRIL<br>5 MAY<br>6 JUNE<br>7 JULY<br>8 AUGUST<br>9 SEPT.<br>10 OCT. |
| 2. About how many miles have you, yourself, driven the 1974 car? Just your best estimate.   | 1 UNDER 1,000<br>2 1,000 - 2,999<br>3 3,000 - 4,999<br>4 5,000 - 6,999<br>5 7,000 - 8,999<br>6 9,000 - 9,999<br>7 10,000 OR OVER<br>8 DON'T KNOW |  |
| 3. Is this car a two door or four door model?   | 1 TWO DOOR<br>2 FOUR DOOR  |  |
| As you know, 1974 cars have a Safety Belt Interlock System which is designed to prevent starting the engine unless the safety belt is fastened.                                     |  |  |
| 4. Would you describe your general impression of the Safety Belt Interlock System as <u>favorable</u> , or <u>unfavorable</u> or don't you have an impression one way or the other? | 1 FAVORABLE<br>2 UNFAVORABLE<br>3 NO IMPRESSION  |  |

--2

5. On most trips where you do the driving in the 1974 car, would you say that you fasten the safety belt --
- 1 ALMOST ALWAYS
  - 2 MORE THAN HALF THE TIME
  - 3 LESS THAN HALF THE TIME
  - 4 ALMOST NEVER
  - 5 NEVER
6. How does this compare with your use of a safety belt in a second or previously owned car -- one that is not a 1974 model -- would you say you fasten or fastened the safety belt in that car --
- 1 ALMOST ALWAYS
  - 2 MORE THAN HALF THE TIME
  - 3 LESS THAN HALF THE TIME
  - 4 ALMOST NEVER
  - 5 NEVER
  - 6 NO SECOND OR PREVIOUS CAR
7. After you have put on the safety belt in your 1974 car, do you usually wear the shoulder harness over your shoulder, under the arm, or behind your back?
- 1 OVER SHOULDER (GO TO Q. 9)
  - 2 UNDER ARM
  - 3 BEHIND BACK
  - 4 OTHER \_\_\_\_\_
  - 5 DON'T PUT ON ANY BELT (GO TO Q. 9)
8. Why do you usually wear the shoulder harness (under the arm) (behind the back)? (DON'T READ ANSWERS)
- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
  - 2 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FEEL TIED IN
  - 3 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
  - 4 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSING ON MATCHING BELT AND BUCKLE
  - 5 WRINKLES CLOTHING
  - 6 OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
  - 7 SHORT LENGTH OF TRIPS, SO BELT NOT NEEDED
  - 8 GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
  - 9 DON'T UNDERSTAND PROPER WAY TO WEAR SHOULDER HARNESS: THOUGHT THIS WAS THE WAY TO WEAR IT
  - 0 SHOULDER HARNESS DIDN'T SEEM TO HOLD ME BACK (MISUNDERSTANDING OF INERTIA REEL)
  - X SHOULDER HARNESS WOULDN'T STAY ON SHOULDER: TOO LOOSE (COMFORT CLIP MAY HAVE BEEN IMPROPERLY ADJUSTED)
  - Y OTHER (Specify) \_\_\_\_\_

9. Has the Safety Belt Interlock System in your car been defeated? By defeated, we mean that the system has been made inoperative by disconnecting a plug or cutting the wires, etc.
- 1 YES, HAS
  - 2 NO, HAS NOT
  - 3 DON'T KNOW

(IF "YES, HAS" ON Q. 9, ASK Q. 10 AND Q. 11, THEN SKIP TO Q. 16):

- |   |   |
|---|---|
| <p>10. Can you tell me what was done to the system so that you can start the car without fastening the safety belt? (DON'T READ ANSWERS)</p>            | <ul style="list-style-type: none"> <li>1 DISCONNECTED PLUG</li> <li>2 CUT WIRES</li> <li>3 OTHER _____</li> <li>4 DON'T KNOW _____</li> </ul>   |
| <p>11. Was the system defeated or made inoperative by yourself, a family member, a friend, a mechanic, an auto dealer, or who?</p> <p>(GO TO Q. 16)</p> | <ul style="list-style-type: none"> <li>1 RESPONDENT</li> <li>2 FAMILY MEMBER</li> <li>3 FRIEND</li> <li>4 MECHANIC</li> <li>5 DEALER OR SALESMAN (AUTO)</li> <li>6 OTHER _____</li> </ul> |

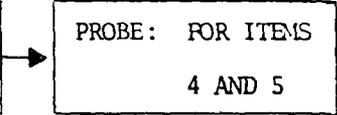
12. Do you circumvent the Safety Belt Interlock System? By circumvent, we mean "fooling" the system such as by fastening the combination lap and shoulder belt behind you, hooking the belt to the door handle, etc.
- 1 YES, DO
  - 2 NO, DO NOT (GO TO Q. 17)
13. How often do you circumvent or "fool" the Interlock System so that you don't have to fasten the safety belt? Would you say --
- 1 ALMOST ALWAYS
  - 2 MORE THAN HALF THE TIME
  - 3 LESS THAN HALF THE TIME
  - 4 ALMOST NEVER
14. How are you able to start and drive the car without fastening the safety belt? Specifically, just what do you do? (DON'T READ ANSWERS)

- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>1 START CAR WITHOUT SITTING ON SEAT: DRIVE WITH BUZZER <u>ON</u></li> <li>2 START CAR WITHOUT SITTING ON SEAT: DRIVE WITH BUZZER <u>OFF</u></li> </ul>   |  | <p>PROBE: FOR BUZZER<br/><u>ON</u> OR <u>OFF</u></p> |
| <ul style="list-style-type: none"> <li>3 CONNECT PASSENGER BELT TO DRIVER'S BUCKLE</li> <li>4 HOOK BELT ON DOOR (HANDLE, ARM REST, WINDOW CRANK, ETC.)</li> <li>5 BUCKLE BELT BEHIND MY BACK</li> <li>6 DON'T BUCKLE BELT BUT SIT ON OR TUCK IN SEAT</li> <li>7 INSERT A SPECIAL PLATE INTO BUCKLE HOLDER</li> <li>8 WAS NOT WORKING WHEN I GOT CAR</li> <li>X OTHER (Specify) _____</li> </ul> |  |  |

15. Did you learn how to circumvent or "fool" the Interlock System yourself or did someone else show you? Who?
- 1 RESPONDENT
  - 2 FAMILY MEMBER
  - 3 FRIEND
  - 4 MECHANIC
  - 5 DEALER OR SALESMAN (AUTO)
  - 6 OTHER \_\_\_\_\_

16. You indicated that the Interlock System is being by-passed so that you don't have to wear your safety belt. Why is this being done? (DON'T READ ANSWERS)

- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
- 2 SHORT LENGTH OF TRIP OR IN AND OUT OF CAR TOO OFTEN
- 3 OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
- 4 GENERALLY NEGATIVE ATTITUDE TOWARD SAFETY BELTS
- 5 GENERALLY NEGATIVE ATTITUDE TOWARD INTERLOCK SYSTEM
- 6 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FEEL TIED IN
- 7 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
- 8 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSING ON MATCHING BELT AND BUCKLE
- 9 WRINKLES OR SOILS CLOTHING
- 10 NEVER FORMED HABIT
- 11 INCONVENIENT
- 12 TOO LAZY, TOO MUCH TROUBLE
- 13 DOUBT VALUE AS SAFETY MEASURE
- 14 PREFER TO START ENGINE BEFORE FASTENING SAFETY BELT
- 15 BE ABLE TO START ENGINE FOR SPECIAL PURPOSE SUCH AS WARM-UP, WORK ON ENGINE, MOVE IN DRIVEWAY, ETC.
- 16 ALWAYS/USUALLY FASTEN BELT -- DON'T NEED INTERLOCK SYSTEM
- 17 A CHILD RESTRAINT PROBLEM:



\_\_\_\_\_  
(WRITE IN SPECIFIC PROBLEM)

18 OTHER (Specify) \_\_\_\_\_

17. Have you experienced any malfunctions or mechanical failures with the Starter Interlock System? PROBE: Any problems for which the manufacturer might be responsible?
- 1 YES, HAVE  
2 NO, HAVE NOT (GO TO Q. 22)
18. What problem(s) have you experienced?
- 1 CAR WILL START WITHOUT FASTENING THE SEAT BELT  
2 CAR WILL NOT START EVEN AFTER THE SEAT BELT HAS BEEN FASTENED  
3 OTHER (Specify) \_\_\_\_\_
19. Was the problem corrected by the dealer who sold the car or by someone else? Who?
- 1 DEALER  
2 RESPONDENT  
3 FAMILY MEMBER  
4 MECHANIC -- OTHER THAN DEALER'S  
5 PROBLEM HAS NOT BEEN CORRECTED (GO TO Q. 22)  
6 OTHER (Specify) \_\_\_\_\_
20. What was the approximate cost of the repair work? \$ \_\_\_\_\_
- 0 NO COST  
X DON'T KNOW
21. About how long was your car laid up because of the Starter Interlock System?
- 1 LESS THAN 4 HOURS  
2 4 - 7 HOURS  
3 1 - 2 DAYS  
4 3 - 4 DAYS  
5 5 DAYS OR OVER  
6 DON'T KNOW
22. Have you received personal instructions on how the combination lap and shoulder belt should be worn in a 1974 car?
- 1 YES  
2 NO, HAVE NOT (GO TO Q. 24)
23. Who instructed you as to the proper way to wear the combination lap and shoulder belt, the car dealer or someone else? Who?
- 1 DEALER OR SALESMAN  
2 FAMILY MEMBER  
3 FRIEND  
4 INSTRUCTION MANUAL IN CAR  
5 OTHER (Specify) \_\_\_\_\_
24. In the 1974 car that you usually drive, would you say the lap belt portion of the combination safety belt is --
- 1 COMFORTABLE TO WEAR  
2 FAIRLY COMFORTABLE (OR)  
3 NOT COMFORTABLE
25. How about the shoulder harness? Would you say it is --
- 1 COMFORTABLE TO WEAR  
2 FAIRLY COMFORTABLE (OR)  
3 NOT COMFORTABLE

26. How would you rate the safety belt on accessibility -- that is, being able to take hold of the buckle, pull it out of the reel and fasten the belt? Would you say this operation presents --
- 1 NO PROBLEM AT ALL
  - 2 A MINOR PROBLEM
  - 3 A MODERATE PROBLEM
  - 4 A SEVERE PROBLEM
27. Was your 1974 car manufactured by American Motors, Chrysler, Ford or General Motors?
- 1 AMERICAN MOTORS
  - 2 CHRYSLER
  - 3 FORD
  - 4 GENERAL MOTORS
  - 5 FOREIGN MAKE
  - 6 OTHER (Specify)

28. Could you describe any particular problem you have had related to comfort and convenience aspects of the safety belt in your 1974 car? (DON'T READ ANSWERS)

- 1 NO, NOTHING, NO SPECIFIC PROBLEM
- 2 FASTENING THE TWO PARTS OF THE BELT TOGETHER (BUCKLING) PRESENTS A PROBLEM
- 3 SHOULDER BELT RUBS ACROSS FACE OR NECK
- 4 PROBLEM WITH LAP BELT LOCKING; LOCKS BEFORE LAP BELT IS ALL THE WAY OUT; COMES UP SHORT, ETC.
- 5 PROBLEM WITH SHOULDER HARNESS LOCKING; LOCKS BEFORE SHOULDER HARNESS IS ALL THE WAY OUT; COMES UP SHORT, ETC.
- 6 SHOULDER BELT RETRACTOR LOCKS AND RESTRAINS BODY MOVEMENT
- 7 DIFFICULT TO GET INTO BACK SEAT -- BELT IN WAY
- 8 DISLIKE MATERIAL IN BELT -- TOO ROUGH, CHAFES SKIN, ETC.
- X OTHER (Specify) \_\_\_\_\_

PROBE: FOR ITEMS 4 AND 5 IF CHRYSLER MENTIONED ON Q. 27.

29. As you know, a person's height, weight and other measurements have a bearing on the comfort aspects of safety belts. For statistical purposes, would you please tell me your --

HEIGHT \_\_\_\_\_ FT. \_\_\_\_\_ IN.  
 WEIGHT \_\_\_\_\_ LBS.  
 WAIST SIZE \_\_\_\_\_ IN.

30. What was the last grade in school you completed?

- 1 8TH GRADE OR LESS
- 2 HIGH SCHOOL INCOMPLETE (GRADES 9, 10, 11)
- 3 HIGH SCHOOL COMPLETE (12TH GRADE)
- 4 SOME COLLEGE OR COLLEGE GRADUATE
- 5 REFUSED

31. In which of these age groups are you?

- 1 20 OR UNDER
- 2 21 - 24
- 3 25 - 39
- 4 40 - 49
- 5 50 - 59
- 6 60 OR OVER
- 7 REFUSED

32. Which one of these statements comes closest to your total family income before taxes for the last year?
- 1 UNDER \$7,000
  - 2 BETWEEN \$7,000 AND \$10,000
  - 3 BETWEEN \$10,000 AND \$15,000
  - 4 BETWEEN \$15,000 AND \$20,000
  - 5 OVER \$20,000
  - 6 REFUSED

33. Which type area do you currently live in -- a city, suburb, small town or rural area?
- 1 CITY
  - 2 SUBURB
  - 3 SMALL TOWN
  - 4 RURAL AREA
  - 5 OTHER (Specify) \_\_\_\_\_
  - 6 DON'T KNOW

34. About how many miles do you, yourself, drive a year?
- 1 UNDER 10,000 MILES
  - 2 10,000 - 14,999
  - 3 15,000 - 19,999
  - 4 20,000 OR OVER

INTERVIEWER: REFER TO Q. 9, PAGE 3. IF RESPONDENT'S ANSWER IS "NO, HAS NOT" (DEFEATED THE INTERLOCK SYSTEM), SAY:

35. Earlier in the interview you said that the Safety Belt Interlock System in your car has not been defeated. Would you like to defeat the Safety Belt Interlock System in your car, or not?
- 1 YES, WOULD LIKE TO
  - 2 NO, WOULD NOT
  - 3 DON'T KNOW

(IF 'YES, WOULD LIKE TO' ON Q. 35, ASK):

36. Why didn't you try to defeat the Interlock System, is it because --
- 1 YOU JUST NEVER GOT AROUND TO IT
  - 2 IT'S TOO COMPLICATED -- DON'T KNOW HOW TO GO ABOUT IT
  - 3 YOU THOUGHT IT MIGHT POSSIBLY DAMAGE THE IGNITION SYSTEM OR CAUSE SOME OTHER PROBLEM
  - 4 OTHER REASON (Specify) \_\_\_\_\_

CIRCLE  
ONE  
NUMBER

RECORD SEX OF RESPONDENT: 1 MALE 2 FEMALE

"This completes the interview. Thank you very much for helping us with the survey."

CITY \_\_\_\_\_ STATE \_\_\_\_\_

NAME OF INTERVIEWER \_\_\_\_\_ CODE NO. \_\_\_\_\_

DATE OF INTERVIEW \_\_\_\_\_ TIME ENDED \_\_\_\_\_

TOTAL TIME \_\_\_\_\_

THANK YOU VERY MUCH.



51183  
120773OMB No. 04573034  
Expires Dec. 31, 1975

TIME STARTED \_\_\_\_\_ AIRPORT STUDY

We're conducting a survey on the use of safety belts for the U.S. Department of Transportation, and I'd like to ask you just a few questions.

1. We noticed that the safety belt in this car (the car you were in) was not on properly. Would you please tell me what you did to enable you to start and drive the car without properly fastening the safety belt?

1	BUCKLED BELT BEHIND MY BACK	
2	DIDN'T BUCKLE BELT BUT SAT ON IT	
3	DIDN'T BUCKLE BELT BUT TUCKED IT IN SEAT	
4	HOOKE BELT ON DOOR (HANDLE, ARM REST, WINDOW CRANK, ETC.)	
5	DISCONNECTED THE WIRES	
6	CONNECTED PASSENGER BELT TO DRIVER'S BUCKLE	GO TO Q. 2
7	STARTED CAR WITHOUT SITTING ON SEAT: DROVE WITH BUZZER ON	
8	STARTED CAR WITHOUT SITTING ON SEAT: DROVE WITH BUZZER OFF	
9	DID NOTHING: SAFETY BELT INTERLOCK SYSTEM WAS NOT WORKING WHEN I GOT CAR	
0	OTHER (Specify): _____	

X	HAD LAP BELT ON BUT WAS WEARING SHOULDER HARNESS IMPROPERLY, E.G., UNDER ARM OR BEHIND BACK	GO TO Q. 3
---	---	------------

2. Why did you choose not to wear the safety belt in this rental car?

- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
- 2 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FEEL TIED IN
- 3 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
- 4 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSION ON MATCHING BELT AND BUCKLE
- 5 WRINKLES CLOTHING
- 6 OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
- 7 SHORT LENGTH OF TRIP, SO BELT NOT NEEDED
- 8 GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
- 9 OTHER (Specify): \_\_\_\_\_



51183  
021274

OMB No. 04573034  
EXPIRES Dec. 31, 1975

AIRPORT STUDY

DRIVERS OF 1974 RENTAL CARS WHO ARE (Circle one):

- 1 WEARING SHOULDER HARNESS
- 2 NOT WEARING SHOULDER HARNESS

We're conducting a survey on the use of safety belts for the U.S. Department of Transportation, and I'd like to ask you just a few questions.

1. Including today, about how often have you driven a 1974 car? Which of these categories best represents the number of days that you have driven a 1974 car -- either a rental car, your own car, or some other 1974 car?

- 1 None before today
- 2 2 - 4 days
- 3 5 - 9 days
- 4 10 - 15 days
- 5 16 - 20 days
- 6 21 - 25 days
- 7 26 - 30 days
- 8 31 days or over

SHOW RESPONDENT  
QUESTIONNAIRE ) →

2. What is the model year of your own car -- that is, the car that you drive most often at home?

MODEL YEAR \_\_\_\_\_

3. What is your age?

RESPONDENT'S AGE \_\_\_\_\_

4. What is your approximate height and weight?

HEIGHT \_\_\_\_\_ FT. \_\_\_\_\_ IN.  
WEIGHT \_\_\_\_\_

5. RECORD: Sex: 1 MALE 2 FEMALE

6. SEAT TYPE: 1 BENCH 2 BUCKET

INTERVIEWER'S NAME \_\_\_\_\_ DATE \_\_\_\_\_

LOCATION: 1 MIAMI  
2 LOS ANGELES



51183  
120775AIRPORT STUDY

TIME STARTED \_\_\_\_\_

We're conducting a survey on the use of safety belts for the Dept. of Transportation, and I'd like to ask you just a few questions.

1. We noticed that the safety belt in this car (the car you were in) was not put on properly. Would you please tell me what you did to enable you to start and drive the car without properly fastening the safety belt?

1.	BUCKLED BEHIND MY BACK	
2.	DIDN'T BUCKLE BELT BUT SAT ON IT	
3.	DIDN'T BUCKLE BELT BUT TUCKED IT IN SEAT	
4.	HOOKED BELT ON DOOR (HANDLE, ARM REST, WINDOW CRANK, ETC.)	
5.	DISCONNECTED THE WIRES	
6.	CONNECTED PASSENGER BELT TO DRIVER'S BUCKLE	GO TO Q. 2
7.	STARTED CAR WITHOUT SITTING ON SEAT: DROVE WITH BUZZER <u>ON</u>	
8.	STARTED CAR WITHOUT SITTING ON SEAT: DROVE WITH BUZZER <u>OFF</u>	
9.	DID NOTHING: SAFETY BELT SYSTEM WAS NOT WORKING WHEN I GOT CAR	
0.	OTHER (specify): _____	

X	HAD LAP BELT ON BUT WAS WEARING SHOULD HARNESS IMPROPERLY, E.G. UNDER ARM OR BEHIND BACK	GO TO Q. 3
---	---	------------

2. Why did you choose not to wear the safety belt in this rental car?

1. PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
2. FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FELT TIED IN
3. DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE - HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN.
4. CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSION ON MATCHING BELT AND BUCKLE
5. WRINKLES CLOTHING
6. OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
7. SHORT LENGTH OF TRIP, SO BELT NOT NEEDED
8. GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
9. OTHER (specify) \_\_\_\_\_

IF "NOT WEARING HARNESS PROPERLY", ASK:

3. Could you tell me why you were not wearing the shoulder harness over your left (right) shoulder?
- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
  - 2 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FEEL TIED IN
  - 3 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
  - 4 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSION ON MATCHING BELT AND BUCKLE
  - 5 WRINKLES CLOTHING
  - 6 OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
  - 7 SHORT LENGTH OF TRIP, SO BELT NOT NEEDED
  - 8 GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
  - 9 DON'T UNDERSTAND PROPER WAY TO WEAR SHOULDER HARNESS, THOUGHT THIS WAS THE WAY TO WEAR IT
  - 0 SHOULDER HARNESS DIDN'T SEEM TO HOLD ME BACK (MISUNDERSTANDING OF INERTIA REEL)
  - X SHOULDER HARNESS WOULDN'T STAY ON SHOULDER, TOO LOOSE (COMFORT CLIP MAY HAVE BEEN IMPROPERLY ADJUSTED)
  - Y OTHER (Specify) \_\_\_\_\_

ASK EVERYONE:

4. What is the model YEAR of your OWN car, that is, the car you drive most often at home? MODEL YEAR OF OWN CAR \_\_\_\_\_

5. Which of these categories best describes how often you wear the safety belt in your own car:

- SHOW RESPONDENT }  
QUESTIONNAIRE } =>
- 1 ALMOST ALWAYS (90% OF THE TIME OR MORE)
  - 2 MORE THAN HALF THE TIME (50-89% OF THE TIME)
  - 3 LESS THAN HALF THE TIME (10-49% OF THE TIME)
  - 4 ALMOST NEVER (1-9% OF THE TIME)
  - 5 NEVER

6. Including today, about how often have you driven a 1974 car? Which of these categories best represents the number of days that you have driven a 1974 car -- either a rental car, your own car, or some other 1974 car?

- SHOW RESPONDENT }  
QUESTIONNAIRE } =>
- 1 NONE BEFORE TODAY
  - 2 2 - 4 DAYS
  - 3 5 - 9 DAYS
  - 4 10 - 15 DAYS
  - 5 16 - 20 DAYS
  - 6 21 - 25 DAYS
  - 7 26 - 30 DAYS
  - 8 31 DAYS OR OVER

7. What is your approximate height and weight? HEIGHT \_\_\_\_\_ FT. \_\_\_\_\_ IN. WEIGHT \_\_\_\_\_

8. What is your age? RESPONDENT'S AGE \_\_\_\_\_

9. Are you a Canadian, an American citizen, or a citizen of another country?

- 1 CANADIAN CITIZEN
- 2 AMERICAN CITIZEN
- 3 OTHER (Specify) \_\_\_\_\_

SEX: 1 MALE 2 FEMALE RESPONDENT: 1 DRIVER 2 PASSENGER  
 CAR LICENSE: \_\_\_\_\_ PROV. \_\_\_\_\_ COLOR \_\_\_\_\_ MAKE \_\_\_\_\_  
 SEAT TYPE: 1 BENCH 2 BUCKET DOOR TYPE: 2 TWO DOOR 4 FOUR DOOR  
 RENTAL AGENCY: 1 AVIS 2 HERTZ 3 TILDEN 4 BUDGET  
 INTERVIEWER: \_\_\_\_\_ TIME ENDED \_\_\_\_\_ DATE \_\_\_\_\_

NOTE TO INTERVIEWER: PLEASE CHECK THAT ALL INFO FILLED IN COMPLETELY BEFORE COMMENCING NEXT INTERVIEW.

51183  
031974

OMB No. 04S73034  
EXPIRES Dec. 31, 1975

AIRPORT STUDY

TIME STARTED \_\_\_\_\_

We're conducting a survey on the use of safety belts for the Department of Transportation, and I'd like to ask you just a few questions.

1. (TO BE ASKED OF DRIVERS OF G.M., FORD, & CHRYSLER CARS ONLY -- USE WHITE QUESTIONNAIRE FOR DRIVERS OF AMERICAN MOTORS)

We notice that the safety belt in this car was not put on properly. In the 1974 cars the safety belt must be worn in order to avoid having the buzzer and warning light on. What did you do with the safety belt to enable you to drive this car without the buzzer and warning light on?

1 DID NOTHING: SAFETY BELT SYSTEM NOT WORKING WHEN I GOT CAR, E.G., BELT ALREADY BUCKLED, BUZZER NOT WORKING, PASSENGER BELT WAS CONNECTED TO DRIVER'S BUCKLE, ETC. 2 I BUCKLED BELT BEHIND MY BACK 3 I SAT ON BELT OR TUCKED IT IN SEAT 4 I HOOKED BELT ON DOOR (HANDLE, ARM REST, WINDOW CRANK, ETC.) 5 I DISCONNECTED THE WIRES 6 I CONNECTED PASSENGER BELT TO DRIVER'S BUCKLE 7 I DROVE WITH BUZZER ON 8 OTHER (Specify) _____ _____	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">           GO TO Q. 2         </div>
---	--

X HAD LAP BELT ON BUT WAS WEARING SHOULDER HARNESS IMPROPERLY, E.G., UNDER ARM OR BEHIND BACK	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">           GO TO Q. 3         </div>
---	--

2. Why did you choose not to wear the safety belt in this rental car?

- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
- 2 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FELT TIED IN
- 3 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
- 4 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSION ON MATCHING BELT AND BUCKLE
- 5 WRINKLES CLOTHING
- 6 OPPOSED ON PRINCIPLE: DON'T WANT TO BE FORCED TO USE BELT, WANT FREEDOM OF CHOICE
- 7 SHORT LENGTH OF TRIP, SO BELT NOT NEEDED
- 8 GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
- 9 OTHER (Specify) \_\_\_\_\_  
\_\_\_\_\_

IF "NOT WEARING HARNESS PROPERLY", ASK:

3. Could you tell me why you were not wearing the shoulder harness over your left (right) shoulder?
- 1 PHYSICAL DISCOMFORT: DON'T LIKE THE WAY IT FEELS, IT HURTS, UNCOMFORTABLE, RUBS NECK OR FACE
  - 2 FEELING OF BEING TRAPPED: CONFINING, RESTRICTIVE, FEEL TIED IN
  - 3 DIFFICULT TO OPERATE: MECHANICALLY HARD TO OPERATE, HARD TO CONNECT BUCKLE -- HAVE TO TRY SEVERAL TIMES, TAKES TOO LONG TO FASTEN
  - 4 CONFUSING TO OPERATE: HARD TO UNDERSTAND, CAN'T TELL HOW TO BUCKLE IT UP, CONFUSION ON MATCHING BELT AND BUCKLE
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  - 7 SHORT LENGTH OF TRIP, SO BELT NOT NEEDED
  - 8 GENERALLY NEGATIVE ATTITUDE: DON'T LIKE IT
  - 9 DON'T UNDERSTAND PROPER WAY TO WEAR SHOULDER HARNESS, THOUGHT THIS WAS THE WAY TO WEAR IT
  - 0 SHOULDER HARNESS DIDN'T SEEM TO HOLD ME BACK (MISUNDERSTANDING OF INERTIA REEL)
  - X SHOULDER HARNESS WOULDN'T STAY ON SHOULDER, TOO LOOSE (COMFORT CLIP MAY HAVE BEEN IMPROPERLY ADJUSTED)
  - Y OTHER (Specify) \_\_\_\_\_

ASK EVERYONE:

4. What is the model YEAR of your OWN car, that is, the car you drive most often at home? MODEL YEAR OF OWN CAR \_\_\_\_\_

5. Which of these categories best describes how often you wear the safety belt in your own car:

- SHOW RESPONDENT }  
QUESTIONNAIRE } =>
- 1 ALMOST ALWAYS (90% OF THE TIME OR MORE)
  - 2 MORE THAN HALF THE TIME (50-89% OF THE TIME)
  - 3 LESS THAN HALF THE TIME (10-49% OF THE TIME)
  - 4 ALMOST NEVER (1-9% OF THE TIME)
  - 5 NEVER

6. Including today, about how often have you driven a 1974 car? Which of these categories best represents the number of days that you have driven a 1974 car -- either a rental car, your own car, or some other 1974 car?

- SHOW RESPONDENT }  
QUESTIONNAIRE } =>
- 1 NONE BEFORE TODAY
  - 2 2 - 4 DAYS
  - 3 5 - 9 DAYS
  - 4 10 - 15 DAYS
  - 5 16 - 20 DAYS
  - 6 21 - 25 DAYS
  - 7 26 - 30 DAYS
  - 8 31 DAYS OR OVER

7. What is your approximate height and weight? HEIGHT \_\_\_\_\_ FT. \_\_\_\_\_ IN.  
WEIGHT \_\_\_\_\_

8. What is your age? RESPONDENT'S AGE \_\_\_\_\_

9. Are you a Canadian, an American citizen, or a citizen of another country?

- 1 CANADIAN CITIZEN
- 2 AMERICAN CITIZEN
- 3 OTHER (Specify) \_\_\_\_\_

SEX: 1 MALE 2 FEMALE RESPONDENT: 1 DRIVER 2 PASSENGER  
 CAR LICENSE: \_\_\_\_\_ PROV. \_\_\_\_\_ COLOR \_\_\_\_\_ MAKE \_\_\_\_\_  
 SEAT TYPE: 1 BENCH 2 BUCKET DOOR TYPE: 2 TWO DOOR 4 FOUR DOOR  
 RENTAL AGENCY: 1 AVIS 2 HERTZ 3 TILDEN 4 BUDGET  
 INTERVIEWER: \_\_\_\_\_ TIME ENDED \_\_\_\_\_ DATE \_\_\_\_\_

NOTE TO INTERVIEWER: PLEASE CHECK THAT ALL INFO FILLED IN COMPLETELY BEFORE COMMENCING NEXT INTERVIEW.

DRIVERS OF 1974 RENTAL CARS  
WHO ARE WEARING SHOULDER HARNESS

We're conducting a survey on the use of safety belts for the Department of Transportation, and I'd like to ask you just a few questions.

1. What influenced you to wear your safety belt in the car you just rented?

- 1 DESIGN OF SAFETY BELT SYSTEM LED ME TO WEAR IT
- 2 HABIT, ALWAYS OR USUALLY WEAR SAFETY BELT
- 3 OTHER \_\_\_\_\_

2. Which of these categories best describes how often you wear the safety belt in your own car:

SHOW RESPONDENT  
QUESTIONNAIRE } →

- 1 ALMOST ALWAYS (90% OF THE TIME OR MORE)
- 2 MORE THAN HALF THE TIME (50-89% OF THE TIME)
- 3 LESS THAN HALF THE TIME (10-49% OF THE TIME)
- 4 ALMOST NEVER (1-9% OF THE TIME)
- 5 NEVER

3. Including today, about how often have you driven a 1974 car? Which of these categories best represents the number of days that you have driven a 1974 car -- either a rental car, your own car, or some other 1974 car?

SHOW RESPONDENT  
QUESTIONNAIRE } →

- 1 NONE BEFORE TODAY
- 2 2 - 4 DAYS
- 3 5 - 9 DAYS
- 4 10 - 15 DAYS
- 5 16 - 20 DAYS
- 6 21 - 25 DAYS
- 7 26 - 30 DAYS
- 8 31 DAYS OR OVER

4. What is the model year of your own car -- that is, the car that you drive most often at home?

MODEL YEAR \_\_\_\_\_

5. What is your age?

RESPONDENT'S AGE \_\_\_\_\_

6. What is your approximate height and weight?

HEIGHT \_\_\_\_\_ FT. \_\_\_\_\_ IN.

WEIGHT \_\_\_\_\_

7. Are you a Canadian, an American citizen or a citizen of another country?

- 1 CANADIAN CITIZEN
- 2 AMERICAN CITIZEN
- 3 OTHER (Specify) \_\_\_\_\_

SEX: 1 MALE 2 FEMALE

RESPONDENT: 1 DRIVER 2 PASSENGER

CAR LICENSE: \_\_\_\_\_ PROV. \_\_\_\_\_ COLOR \_\_\_\_\_ MAKE \_\_\_\_\_

SEAT TYPE: 1 BENCH 2 BUCKET DOOR TYPE: 2 TWO DOOR 4 FOUR DOOR

RENTAL AGENCY: 1 AVIS 2 HERTZ 3 TILDEN 4 BUDGET

INTERVIEWER: \_\_\_\_\_

NOTE TO INTERVIEWER: PLEASE CHECK THAT ALL INFO FILLED  
IN COMPLETELY BEFORE COMMENCING NEXT INTERVIEW.



## PROCEDURE FOR INSPECTING SEAT BELT SYSTEMS

- STEP 1      INSPECTION                      Visually inspect and record whether driver's seat belt is buckled or unbuckled.
- STEP 2      WARNING SYSTEM  
TEST--BUCKLED                      1. Reach in prior to sitting on the seat and buckle driver's seat belt (if it is not already buckled).  
2. Sit on seat.  
3. Turn ignition to "on" (on AM cars start) and place gear shift in "drive."  
4. Record results.  
5. Place gear shift in "neutral" and turn ignition to "off."  
6. Unbuckle belt.  
7. Step out of the car.  
8. If neither light nor buzzer are activated, proceed to Step 3. Otherwise, inspection is completed.
- STEP 3      WARNING SYSTEM  
TEST--UNBUCKLED                      1. Remain out of the car for at least 15 seconds to allow system to reset.  
2. Sit on seat.  
3. Turn ignition to "on" (on AM cars start) and place gear shift in "drive."  
4. Record results.  
5. Place gear shift in "neutral" and turn ignition to "off."  
6. Step out of the car.  
7. If neither light nor buzzer are activated, proceed to Step 4. Otherwise, inspection is completed.
- STEP 4      PLUG CHECK                      Reach under the driver's seat to determine if seat belt system plug is connected. If it is connected, record it as such. If it is disconnected, record it as such and re-connect it. Plugs that cannot be re-connected should be reported to the rental agency.

Verified vs. Unverified Observations

ORC tabulated a total of 88,907 observations of safety belt usage among drivers and front seat passengers, as recorded by field personnel in the 19-city study during the period February 1974 to February 1975. The 88,907 observations are shown in Figures 3 and 4 of this report as follows:

	<u>Verified</u>	<u>Unverified</u>
(Drivers plus Passengers) Total N		
1974 cars = 29,751	29,751	65,927
1973 cars = <u>8,276</u>	<u>8,276</u>	<u>22,980</u>
	38,027	88,907

There are a number of factors which reduced the unverified total of 88,907 to a verified total of 38,027. The specific factors involved, along with the frequencies, are shown in the following table:

Total unverified observations	88,907
Less passenger observations	<u>-21,515</u>
Number of cars observed	67,392
Less license number not yet sent to DMV's (Nov. 1974 through Feb. 1975)	<u>-20,899</u>
Total license numbers sent to DMV's (Feb. 1974 through Oct. 1974)	46,493
License numbers identified by DMV's as:	
Less pre-1973 models	- 5,202
Less those not in file	<u>- 5,626</u>
Total verified by DMV as 1973 or 1974 car	35,665
ORC tabulations:	
Less cases where observer and DMV not agree on model year	- 5,959
Less duplicate observations (drivers observed more than once during the observation day)	- 1,090
Plus verified passenger observations	<u>+ 9,411</u>
Verified observations -- observer and DMV agree on model year	38,027

### Sampling Tolerances

This section of the appendix presents data used in identifying the differences in survey findings that are, or are not, statistically significant.

The tables have been designed to reflect the actual numbers of cases in numerous subgroups likely to be compared, for example, men vs. women.

Five tables are included:

#### General Population of Vehicles

Observation data

Interview data

#### Rental Car Study -- U.S. Airports

Observation data

Interview data

#### Rental Car Study -- Toronto

Observation and interview data

Each table shows (in the stub or left-hand column) the numbers of cases involved in the comparison and (in the column headings) the approximate level of the percentage difference being tested. Percentages in the body of the table show the size of the difference required for the difference to be statistically significant, at the 95-in-100 confidence level.

Sampling Tolerances

## Observation Data

## General Population of Vehicles -- 19 Cities

		Differences Required for Significance at or Near These Percentage Levels				
		10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
1974 models - 29,751 vs.						
1973 models 8,276		2%	2%	2%	2%	2%
Drivers - 22,260 vs.						
Passengers 7,491		2%	2%	2%	2%	2%
Male - 15,499 vs.						
Female 6,761		2%	2%	2%	2%	2%
Bench - 13,183 vs.						
Bucket 16,422		2%	2%	2%	2%	2%
Two-door - 9,764 vs.						
Four-door 3,545		2%	2%	2%	2%	2%
GM - 16,211 vs.						
Ford 9,106		2%	2%	2%	2%	2%
Chrysler 1,787		2%	2%	3%	3%	3%
Foreign 1,333		2%	2%	3%	3%	3%
AMC 994		2%	3%	4%	4%	4%
Ford - 9,106 vs.						
Chrysler 1,787		2%	2%	3%	3%	3%
Foreign 1,333		2%	3%	3%	4%	4%
AMC 994		2%	3%	4%	4%	4%

Differences Required for Significance  
at or Near These Percentage Levels

		10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Chrysler -	1,787 vs.					
Foreign	1,333	3%	4%	4%	4%	4%
AMC	994	3%	4%	4%	5%	5%
Foreign -	1,333 vs.					
AMC	994	3%	4%	5%	5%	5%
Subcompact -	4,134 vs.					
Compact	7,426	2%	2%	2%	2%	2%
Intermediate	7,704	2%	2%	2%	2%	2%
Standard	5,307	2%	2%	2%	3%	3%
Luxury	1,876	2%	2%	3%	3%	3%
Compact -	7,426 vs.					
Intermediate	7,704	2%	2%	2%	2%	2%
Standard	5,307	2%	2%	2%	2%	2%
Luxury	1,876	2%	2%	3%	3%	3%
Intermediate -	7,704 vs.					
Standard	5,307	2%	2%	2%	2%	2%
Luxury	1,876	2%	2%	3%	3%	3%
Standard -	5,307 vs.					
Luxury	1,876	2%	2%	3%	3%	3%

Sampling Tolerances

## Interview Data

## General Population of Vehicles -- 19 Cities

		Differences Required for Significance at or Near These Percentage Levels				
		<u>10% or</u>	<u>20% or</u>	<u>30% or</u>	<u>40% or</u>	
		90%	80%	70%	60%	50%
Male - 1,368 vs.						
Female 858		3%	4%	5%	5%	5%
Under 25 yrs -	352 vs.					
25-39	762	5%	6%	7%	8%	8%
40-49	443	5%	7%	8%	9%	9%
50-59	387	5%	7%	8%	9%	9%
60 yrs. or over	240	6%	8%	9%	10%	10%
25-39 yrs. -	762 vs.					
40-49	443	4%	6%	7%	7%	7%
50-59	387	5%	6%	7%	7%	8%
60 yrs. or over	240	5%	7%	8%	9%	9%
40-49 yrs. -	443 vs.					
50-59	387	5%	7%	8%	8%	9%
60 yrs. or over	240	6%	8%	9%	10%	10%
50-59 yrs. -	387 vs.					
60 yrs. or over	240	6%	8%	9%	10%	10%

Differences Required for Significance  
at or Near These Percentage Levels

		<u>10% or</u>	<u>20% or</u>	<u>30% or</u>	<u>40% or</u>	<u>50%</u>
		90%	80%	70%	60%	
High school incomplete - 288 vs.						
High school complete	765	5%	7%	8%	8%	8%
College	1,096	5%	6%	7%	8%	8%
High school complete - 765 vs.						
College	1,096	3%	5%	5%	6%	6%
Drove 1974 car:						
15-18 months - 175 vs.						
11-14 months	610	6%	8%	10%	10%	11%
7-10 months	974	6%	8%	9%	10%	10%
1- 6 months	458	7%	9%	10%	11%	11%
11-14 months - 610 vs.						
7-10 months	974	4%	5%	6%	6%	6%
1- 6 months	458	5%	6%	7%	7%	8%
7-10 months - 974 vs.						
1- 6 months	458	4%	6%	6%	7%	7%
AMC - 138 vs.						
Chrysler	185	8%	11%	13%	14%	14%
Ford	607	7%	9%	11%	11%	12%
GM	1,117	7%	9%	10%	11%	11%
Foreign	146	9%	12%	13%	14%	15%

Differences Required for Significance  
at or Near These Percentage Levels

	10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Chrysler - 185 vs.					
Ford 607	6%	8%	9%	10%	10%
GM 1,117	6%	8%	9%	10%	10%
Foreign 146	8%	11%	12%	13%	14%
Ford - 607 vs.					
GM 1,117	4%	5%	6%	6%	6%
Foreign 146	7%	9%	10%	11%	11%
GM - 1,117 vs.					
Foreign 146	6%	9%	10%	11%	11%
Two door - 1,619 vs.					
Four-door 606	4%	5%	5%	6%	6%
Reported usage:					
Both on - 1,010 vs.					
Lap only 268	5%	7%	8%	8%	8%
Both off 948	3%	4%	5%	5%	6%
Lap only - 268 vs.					
Both off 948	5%	7%	8%	8%	8%
Interlock:					
Defeated - 743 vs.					
Not defeated 1,471	3%	4%	5%	5%	6%

Differences Required for Significance  
at or Near These Percentage Levels

	10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Circumvents - 743 vs.					
Does not 1,187	3%	5%	5%	6%	6%
Discomfort index:					
High - 257 vs.					
Moderate 488	6%	8%	9%	9%	9%
Low 456	6%	8%	9%	9%	10%
None 1,025	5%	7%	8%	8%	9%
Moderate - 488 vs.					
Low 456	5%	6%	7%	8%	8%
None 1,025	4%	5%	6%	7%	7%
Low - 456 vs.					
None 1,025	4%	6%	6%	7%	7%

Sampling Tolerances

## Observation Data

## Rental Car Study -- U.S. Airports

		Differences Required for Significance at or Near These Percentage Levels				
		<u>10% or</u>	<u>20% or</u>	<u>30% or</u>	<u>40% or</u>	<u>50%</u>
		90%	80%	70%	60%	
Miami -	21,192 vs.					
Los Angeles	10,437	2%	2%	2%	2%	2%
Chicago	13,095	2%	2%	2%	2%	2%
Los Angeles -	10,437 vs.					
Chicago	13,095	2%	2%	2%	2%	2%
Drivers -	37,016 vs.					
Passengers	7,708	2%	2%	2%	2%	2%
Male -	38,651 vs.					
Female	6,073	2%	2%	2%	2%	2%
AMC -	5,498 vs.					
Chrysler	7,018	2%	2%	2%	2%	2%
Ford	11,240	2%	2%	2%	2%	2%
GM	20,521	2%	2%	2%	2%	2%
Bench -	14,098 vs.					
Bucket	8,685	2%	2%	2%	2%	2%

Differences Required for Significance at or Near These Percentage Levels						
10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%		

Subcompact -	2,965 vs.					
Compact	8,345	2%	2%	2%	3%	3%
Intermediate	23,450	2%	2%	2%	2%	2%
Standard	7,953	2%	2%	2%	3%	3%
Luxury	377	4%	5%	6%	7%	7%
Compact -	8,345 vs.					
Intermediate	23,450	2%	2%	2%	2%	2%
Standard	7,953	2%	2%	2%	2%	2%
Luxury	377	4%	5%	6%	6%	6%
Intermediate -	23,450 vs.					
Standard	7,953	2%	2%	2%	2%	2%
Luxury	377	4%	5%	6%	6%	6%
Standard -	7,953 vs.					
Luxury	377	4%	5%	6%	6%	6%

Sampling Tolerances

## Interview Data

## Rental Car Study -- U.S. Airports

		Differences Required for Significance at or Near These Percentage Levels				
		<u>10% or 90%</u>	<u>20% or 80%</u>	<u>30% or 70%</u>	<u>40% or 60%</u>	<u>50%</u>
Male -	7,764 vs.					
Female	874	2%	3%	4%	4%	4%
Drivers -	7,926 vs.					
Passengers	773	3%	4%	4%	5%	5%
Under 30 yrs. -	1,098 vs.					
30-39	2,671	3%	3%	4%	4%	4%
40-49	2,753	3%	3%	4%	4%	4%
50 yrs. and over	2,110	3%	4%	4%	4%	5%
30-39 yrs. -	2,671 vs.					
40-49	2,753	2%	3%	3%	3%	3%
50 yrs. and over	2,110	2%	3%	3%	3%	4%
40-49 yrs. -	2,753 vs.					
50 yrs. and over	2,110	2%	3%	3%	3%	4%
AMC -	835 vs.					
Chrysler	1,449	3%	4%	5%	5%	5%
Ford	1,852	3%	4%	5%	5%	5%
GM	4,458	3%	4%	4%	5%	5%

		Differences Required for Significance at or Near These Percentage Levels				
		10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Chrysler -	1,449 vs.					
Ford	1,852	3%	3%	4%	4%	4%
GM	4,458	2%	3%	3%	4%	4%
Ford -	1,852 vs.					
GM	4,458	2%	3%	3%	3%	3%
Bench -	6,032 vs.					
Bucket	2,501	2%	2%	3%	3%	3%
Subcompact -	450 vs.					
Compact	1,400	4%	5%	6%	7%	7%
Intermediate	4,751	4%	5%	6%	6%	6%
Standard	1,371	4%	5%	6%	7%	7%
Luxury	82	9%	12%	13%	14%	15%
Compact -	1,400 vs.					
Intermediate	4,751	2%	3%	3%	4%	4%
Standard	1,371	3%	4%	4%	5%	5%
Luxury	82	8%	11%	13%	14%	14%
Intermediate -	4,751 vs.					
Standard	1,371	2%	3%	3%	4%	4%
Luxury	82	8%	11%	12%	13%	14%
Standard -	1,371 vs.					
Luxury	82	8%	11%	13%	14%	14%

Sampling Tolerances

Observation and Interview Data

Rental Car Study -- Toronto

		Differences Required for Significance at or Near These Percentage Levels				
		10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Toronto -	4,690 vs.					
U.S. airports	44,724	2%	2%	2%	2%	2%
Working systems -	1,025 vs.					
Nonworking systems	2,102	3%	4%	4%	5%	5%
Interlock -	24 vs.					
Sequential	183	16%	21%	24%	26%	27%
Light and buzzer	842	15%	20%	23%	25%	25%
Sequential -	183 vs.					
Light and buzzer	842	6%	8%	9%	10%	10%
Nonworking systems:						
AMC -	88 vs.					
Chrysler	891	8%	11%	13%	13%	14%
Ford	385	9%	12%	13%	14%	14%
GM	1,104	8%	11%	12%	13%	14%
Chrysler -	891 vs.					
Ford	385	4%	6%	7%	7%	7%
GM	1,104	3%	4%	5%	5%	5%
Ford -	385 vs.					
GM	1,104	4%	6%	7%	7%	7%

Differences Required for Significance  
at or Near These Percentage Levels

		10% or 90%	20% or 80%	30% or 70%	40% or 60%	50%
Working systems:						
Chrysler - 188 vs.						
Ford	147	8%	11%	12%	13%	13%
GM	666	6%	8%	9%	10%	10%
Ford - 147 vs.						
GM	666	7%	9%	10%	11%	11%
Users - 143 vs.						
Nonusers	85	10%	13%	15%	16%	17%